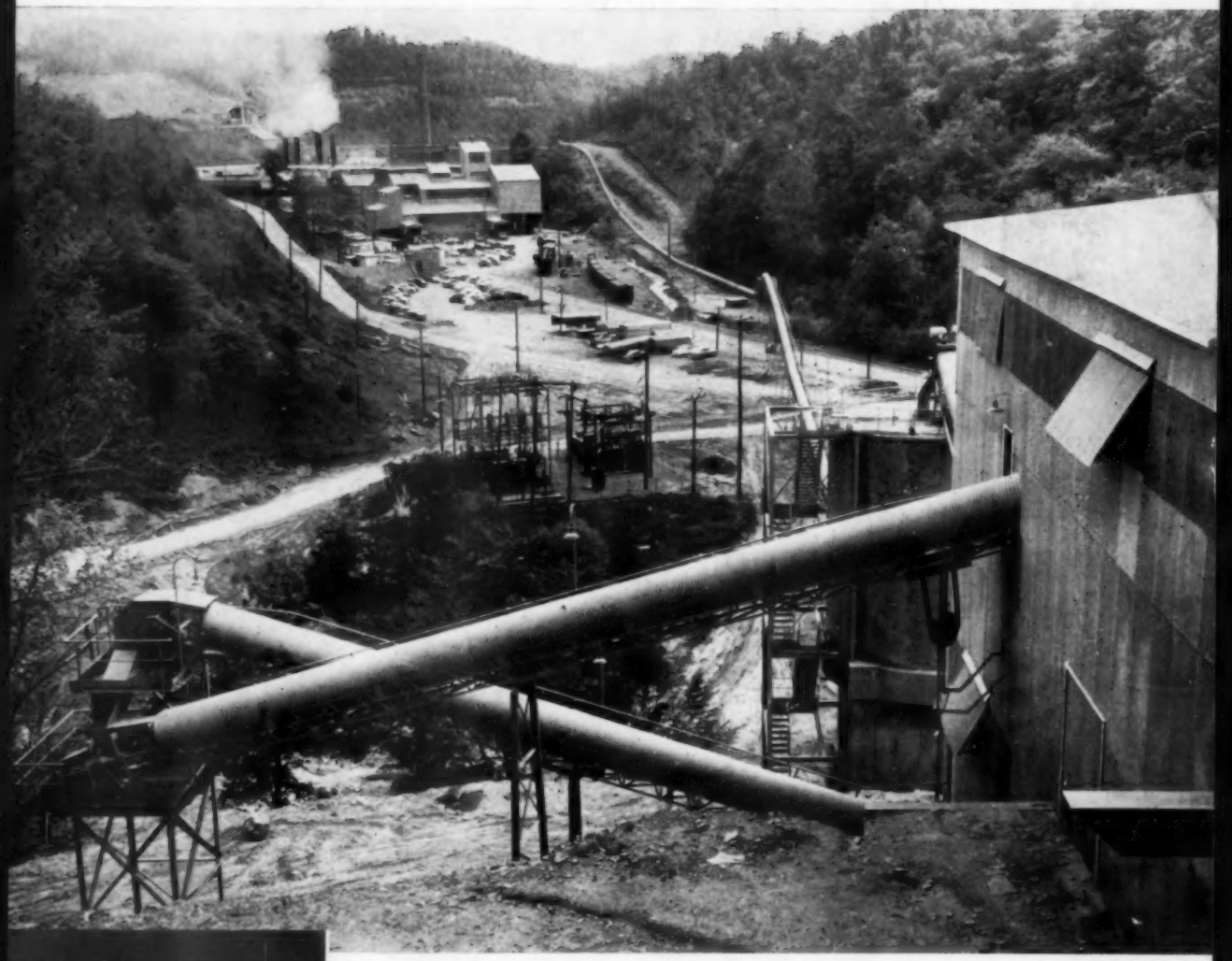
NOVEMBER 1955

PIT and QUARRY



Marquette Cement Mfg. Company's Newly Converted Operation at Superior, Ohio. (See Page 78.)

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Bruise breaks, heat blowouts—practically things of the past! Excess stretch, flex failure, ply separation—virtually ended! Longer tire-life, more re-lugs and recaps—because 3-T Nylon Cord bodies stand up so much longer!

Less down time—lower tire-cost-per-job!

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PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

pit and quarry

NOVEMBER 1955—vol. 48, no. 5

Editorial: Safety Reached a New High in 1954 10
Washington News Letter 12
News of the Industry 21
Thirty Years Ago in Pit and Quarry 47
Screenings 68
New Material Service Plant Opened at Algonquin, Ill. 71
Conversion at Superior—Marquette Operation Shifted from Mining to Open Quarrying 78
Flexibility Plus at West Lake Quarry 84
Carolina Solite's Aggregate Plant Expanded After One-Year Operation 89
Kentucky Concern Beats High Cost of Purchased Power—Builds Own Power Plant 94
N.S.G.A. Board Members Map Progress Along Wide Industry Front 102
Portable-Stationary Combination Used by Iowa Gravel Producer 110
Vital Industry Issues Discussed at Fall Meeting of N.I.S.A. 119
Harbison-Walker's New Silica Refractories Plant 126
Preparing for Automation 133
Contented Employees Work Most Effectively 143
Labor Developments 149

The Concrete Manufacturer

Editorial: Automation 217
News of the Concrete Industries 219
Andersen Sand and Gravel—Dual Operation Features Dust Control 233
Keys Industries of St. Petersburg 240
Successful N.R.M.C.A. Board Sessions Well Attended at Hot Springs 242
Make Your 1955 Tax Savings Before the Year's End 251
Recent Changes in Practice in High-Pressure-Steam Curing Systems 253
How Safe Is Your Plant? 258

New Machinery 80
More Information Please 99
Industry Personalities 160
Obituaries 164
Legal Decisions 168
Manufacturers' News 180
Index to Advertisers 291

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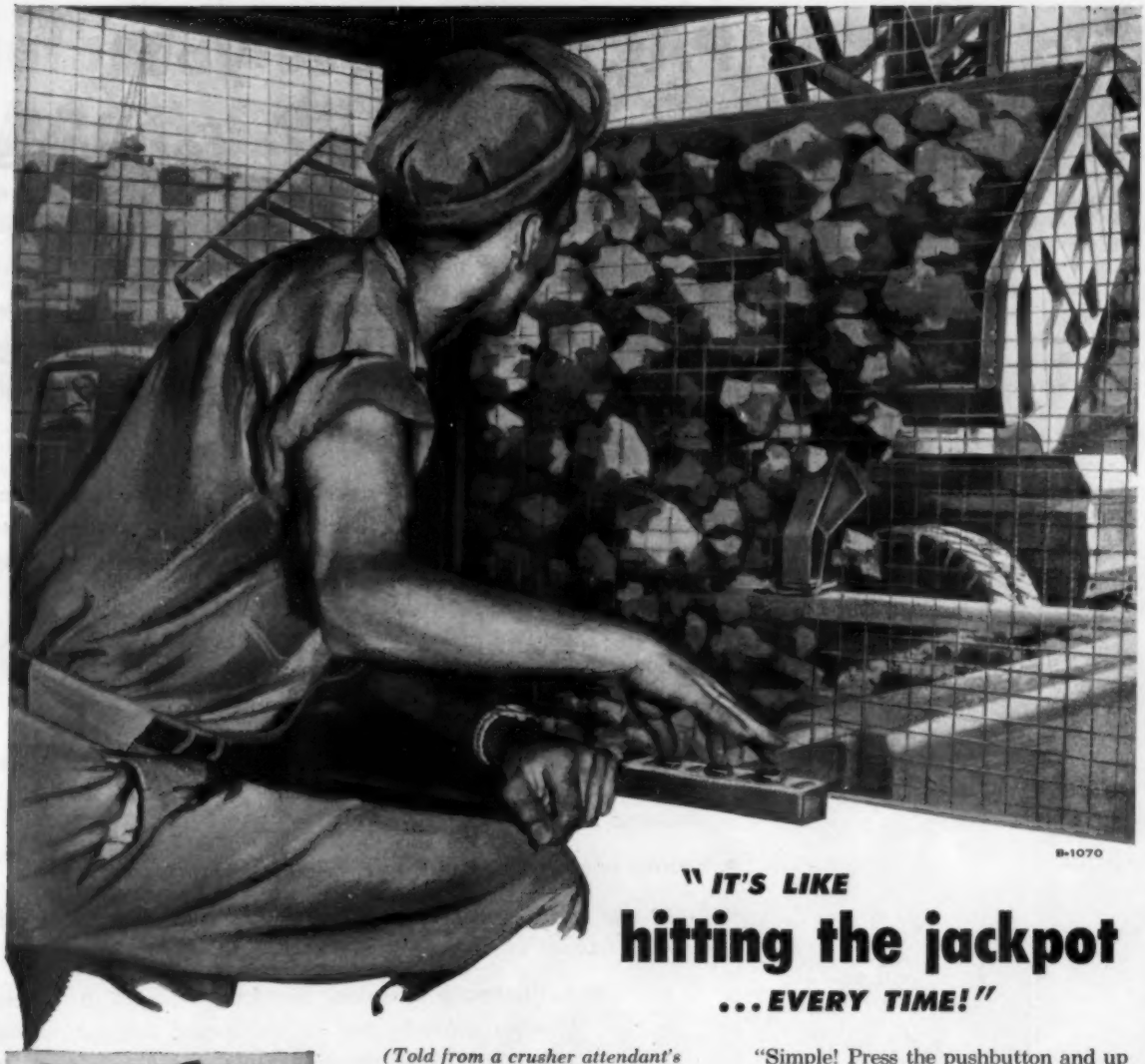

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"IT'S LIKE hitting the jackpot ...EVERY TIME!"

You can't beat this combination . . . exclusive EASTON electric overhead dumping system and EASTON doorless pan trailer. Dependable dumping is the crucial factor in all modern mine and quarry transportation.

(Told from a crusher attendant's point of view)

"HERE, AT THE CRUSHER, is where you see how EASTON pays off! It's the only equipment specially built for this work —steady shuttle service between shovels and crushers. Savings you make *right here* with EASTON pile up all day.

"Watch that big EASTON trailer roll straight in . . . no backing and turning. It's not carrying the 1000-pound dead weight of a temperamental body hoist. The driver doesn't have to dump a load that he can't watch. He sits there while I take over with the EASTON automatic electric overhead hoist.

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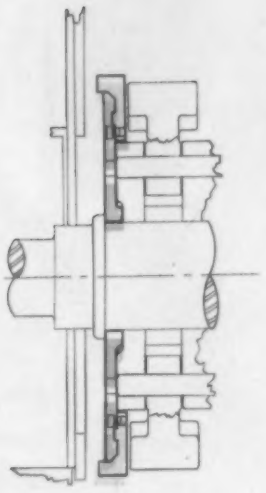
Your money is saved (or lost) *at the dumping point.* For the most efficient system you can own get the advantages of EASTON's exclusive background of experience and the EASTON automatic electric overhead hoist. EASTON trailer capacities range from 10 to 36 tons.

No other **IMPACTOR** gives you *All* these features

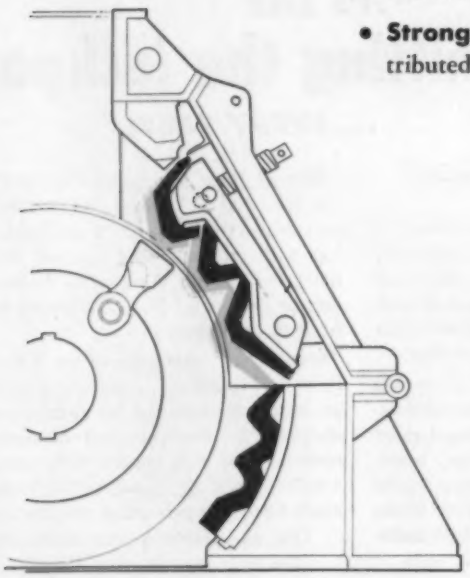


Showing renewable liners on end discs.

Pennsylvania originated the Impactor nearly twenty years ago and has been improving it ever since. Listed here are some of the improvements that you get in today's Pennsylvania Impactor, features that have been arrived at through constant on-the-job study and development by Pennsylvania's engineers and the cooperation of users.

- **Renewable Liners** on end discs are replaced when worn, instead of entire disc, reducing maintenance costs. Since liners rotate with the discs wear on end hammers is much less than if liners were stationary. Can be replaced without removing rotor.
- **Built-In Fly Wheel**—heavier discs on rotor give fly wheel effect eliminating need of external fly wheel.
- **Extra Heavy Shaft** not exposed to wear.
- **Oversized Antifriction Tapered Bearings** mounted on tapered section of shaft. Bearings are leveled and rest on a machined surface.
- **Frame** protected by liners over entire interior surface.
- **Stronger Hammers**—eyes designed after careful study of distributed stresses based on photo-elastic tests.
- **Adjustable Breaker Blocks** (pat. apld. for) keep product uniform and at maximum tonnage during entire life of hammers and blocks. Special design of Block contour gives maximum impact reduction—cubical product. No exposed fastening members.

Ask for bulletin that gives complete details of these and other features.



Dotted lines show adjustment range of breaker blocks toward hammer circle. Where needed bottom blocks can be made adjustable also.

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Thousands of crusher installations plus 50 years experience designing and developing size reduction machinery makes our engineering staff an outstanding group to consult with on crushing problems.

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PE-202

Another quarry that can tell you about ROCK SHOVELS!

● The Mausdale Quarry of Danville, Pa., puts their machines in material that will really test equipment. Look at the samples in the picture. It is service in stuff like this that has made the Mausdale Quarry buy their 6th Northwest.

Northwests are *real* Rock Shovels! Get up on a Northwest sometime if you know operation. Get the feel of the controls yourself. Feel that crowd take a-hold. The dipper goes right on through as the hoist takes it up—no "re-starts" are required here. It's a full load in one cut. Remember the Northwest Dual Independent Crowd utilizes force most other independent crowd shovels waste—force that puts greater effectiveness at the dipper lip for handling tougher digging and producing more output.

To Northwest digging power add the "Feather-Touch" Clutch Control which brings ease of operation without the complications of pumps, piping and compressors; the Cushion Clutch that eliminates shovel overloads before the damage is done; Uniform Pressure Swing Clutches that cut spotting time by eliminating the jerks and grabs in swinging; Northwest simplicity of design that makes upkeep easy and reduces "down time"; and all other Northwest advantages that make Northwest a *real* Rock Shovel.

You can plan to have a Northwest. Now is the time to find out about Northwest design and operation. Why not talk it over with a Northwest Man?

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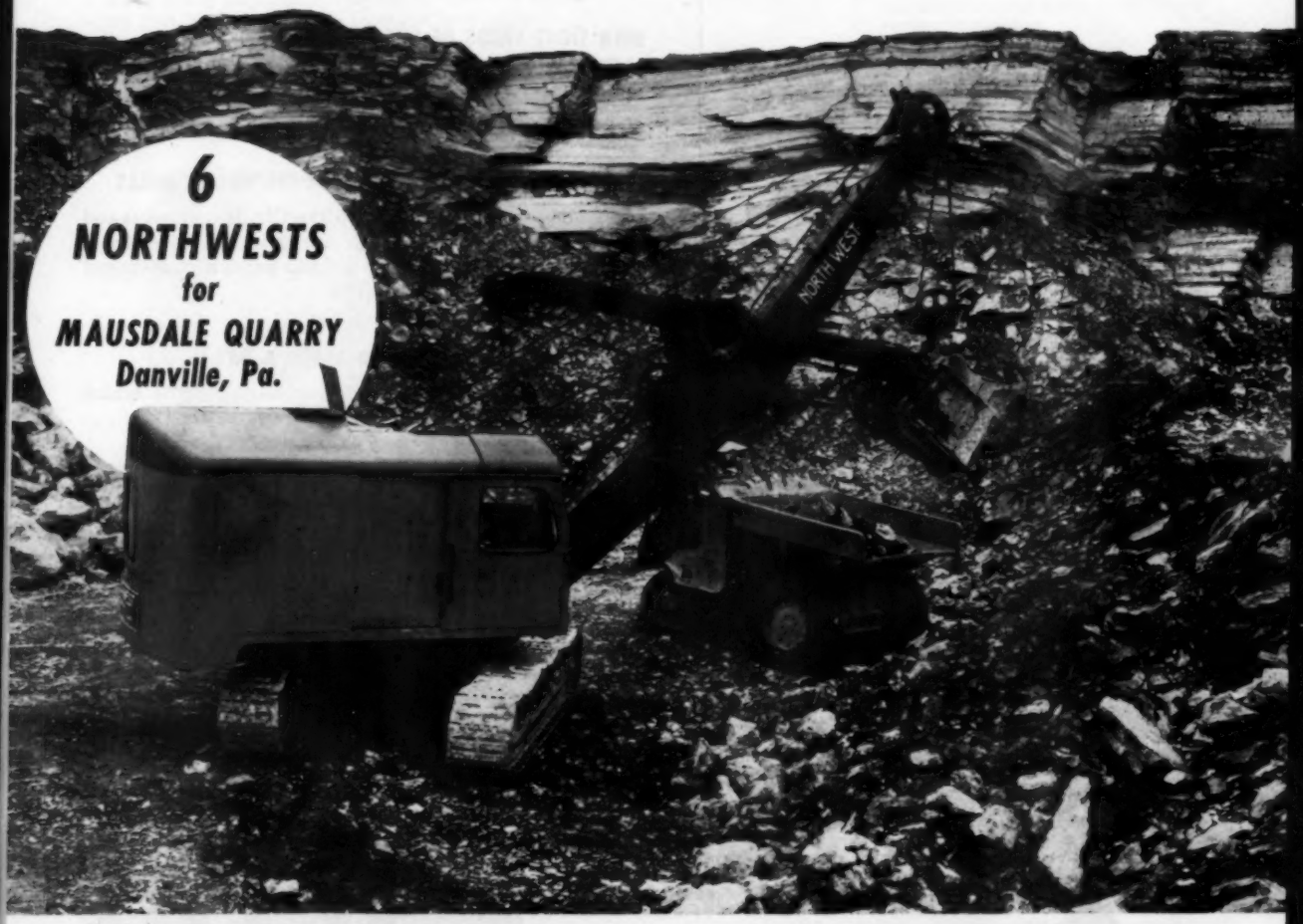

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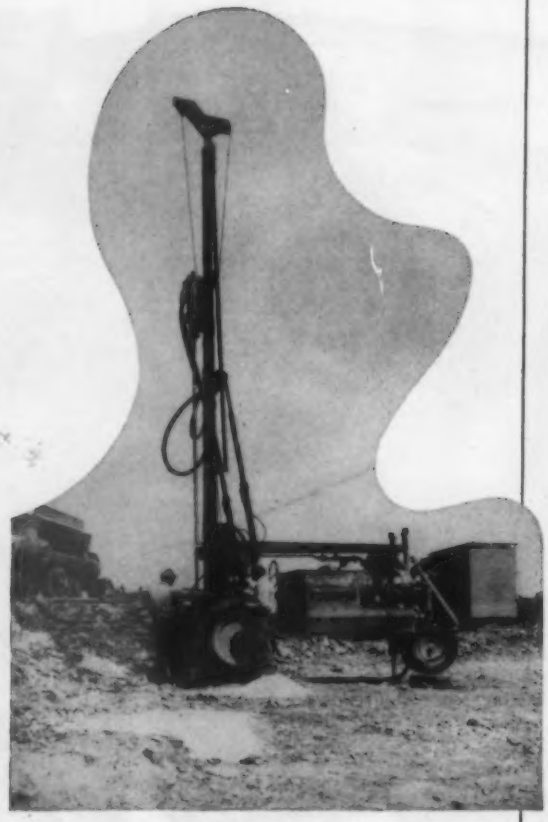
Convertible for any Mining Material Handling or Excavation Problem

THIS JOY CHALLENGER REPLACED FOUR WAGON DRILLS

QUARRY INCREASES PRODUCTION 600 YDS. A DAY IN SWITCH TO JOY TM-500 CHALLENGER DRILL



OVER EIGHT YARDS OF ROCK PER FOOT OF HOLE

. . . That's the production rate of the Joy Challenger on this quarry job. 3½" holes, in a 17′ x 13′ pattern, were drilled to depths of 30′.

ONLY ONE-AND-A-THIRD YARDS FOR THE WAGON DRILLS

The footage per day with the Challenger averaged 275 ft. The wagon drills . . . with smaller, shallower, less productive holes in a closer pattern . . . averaged only slightly more—300 ft.

CHALLENGER GETS OVER 2200 YARDS A DAY

Compare that with the four wagon drills which were able to produce a bare 1600 yards a day . . . less than 75% of the Challenger's output.

SELF-PROPELLED CHALLENGER SETS UP FAST

The 5¼" TM-500 Challenger Hammer Drill features powerful blowing action and rotation. Hydraulic control of mast and leveling jacks gives fast, easy setups.

BULLETIN 87-U GIVES COMPLETE DETAILS

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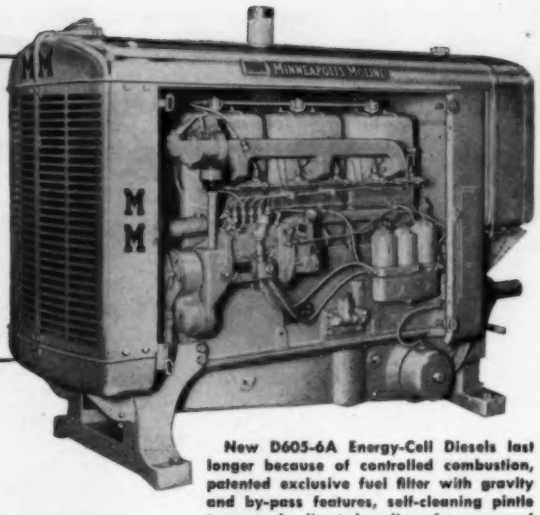
JOY W&D C8474

CONSTRUCTION EQUIPMENT MANUFACTURERS FOR OVER HALF A CENTURY

WHY IT PAYS TO OWN INDUSTRIAL DIESELS WITH REMOVABLE CYLINDER BLOCKS AND HEADS

New MM diesels were developed with *energy-cells* to make them last longer, do more and go farther with less down-time and maintenance.

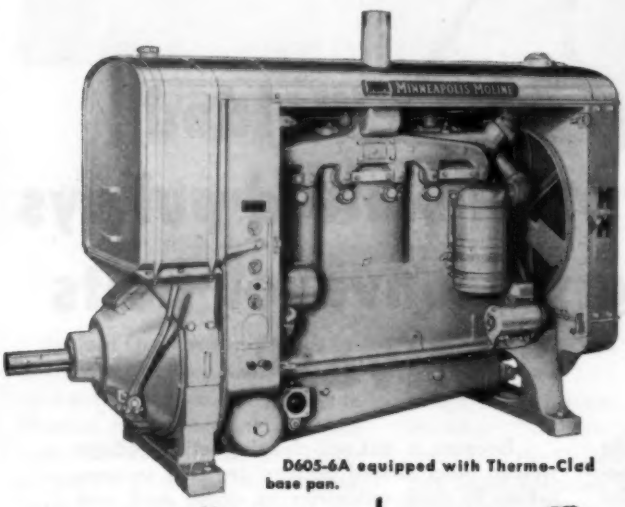
To provide owners with lower cost maintenance when necessary MM diesels are the most advanced and soundly engineered because the cylinder blocks are cast in pairs separate from the crankcase.



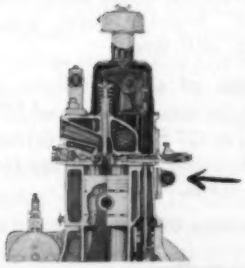
New D605-6A Energy-Cell Diesels last longer because of controlled combustion, patented exclusive fuel filter with gravity and by-pass features, self-cleaning pintle type nozzle, directed cooling of area around combustion chambers.

YOU GET THESE ADDED ADVANTAGES . . .

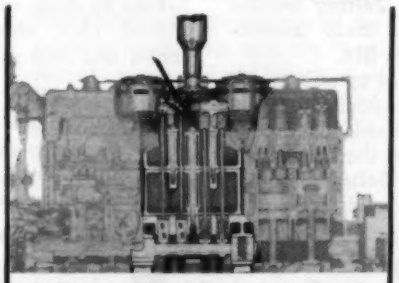
1. Ease of maintenance and low cost emergency service because paired cylinder blocks, pistons, and rods can be removed as a unit by one man.
2. Prolonged time between overhauls by use of close-grain cast iron that provides best cylinder lubrication for reduced wear.
3. Less service due to minimum distortion as MM cylinder heads, cylinder blocks and crankcase are virtually strapped together by full-length steel studs anchored in the main bearing bulkheads. (Transmits combustion pressure to heavy crankcase that has extra depth below center line of crankshaft.)
4. Efficient operation obtained by uniform cylinder expansion . . . the result of controlled cooling and long oil-cooled cylinder wall skirts below ring travel area.
5. "New engine" performance at extremely nominal cost can be obtained right in the field without special tools using factory matched cylinder blocks, pistons, pins, and rings. (Blocks are dowelled to crankcase to assure bore is square with crankshaft and pistons are precision fit to bore . . . equivalent to a factory job.)
6. Lower initial cost stems from high production parts by casting cylinder blocks in pairs separate from the crankcase.



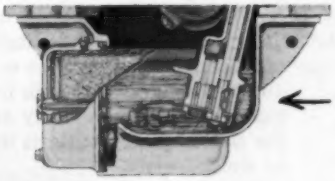
D605-6A equipped with Thermo-Clad base pan.



1. Cylinder head and block assembly shows coolant entrance at hottest point first and extra long skirt wall construction.



2. Close-up of how MM cylinder heads and blocks and crankcase are tied into a single rigid unit with long studs.



3. A D283 feature is extra large oil filter enclosed in base pan, floating-screen oil pump intake, and pump located in bottom of base pan.

Optional Thermo-clad water-blanketed base pans for all units also have oil filter included to give more effective filtering.

INDUSTRIAL
MINNEAPOLIS-MOLINE
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MODERN MACHINERY
DIVISION

MINNEAPOLIS-MOLINE

MINNEAPOLIS 1, MINNESOTA

These Jeffrey welded steel slatted pulleys keep gritty or sticky material from damaging belts. Wide crossbars give good belt traction . . . rounded edges prevent gouging. Cone under-structure assures constant self-cleaning. Crown face or straight face.

Welded steel slatted pulleys give conveyor belts "9 lives"

Conveyor (and bucket elevator) belts die fast when abrasive or sticky materials lodge between them and the pulleys. Jeffrey welded steel slatted pulleys eliminate these trouble-makers, greatly extending belt life.

These pulleys will not build up substances that cause belt fabric damage and misalignment as when solid face pulleys are used. Their cone design discharges run-offs from the belt before damage is done. Not only are *belts saved*, but the slatted pulley outlasts the solid face pulley as well!

Because of this self-cleaning action, Jeffrey welded steel slatted pulleys are real money-savers in such industries as stone, sand and gravel, clay, chemical, foundry, iron, slag, metal and coal mining, and wood.

Wide range of sizes

They are available in standard sizes of 12" to 42" diameter and 8" to 42" face width (other size combinations on request). Write today for a quotation on your needs.

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THE JEFFREY MANUFACTURING CO.

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Columbus 16, Ohio

sales offices and distributors in principal cities

PLANTS IN [illegible], SOUTH AFRICA

IF IT'S MINED, PROCESSED OR MOVED

. . .IT'S A JOB FOR JEFFREY!

Insert: View of screening operation showing the two Deister 3-deck Model UHS Screens operating in tandem. All told, Kerford has purchased 9 Deister Screens, including a Model SL Ag-Lime Screen, and a Model F Horizontal Screen since the original installation at Atchison.

All 3 Kerford Quarries maintain top production with DEISTER Screens

Kerford Quarries began operation in 1886 at Atchison, Kansas, opened up a second operation at Amazonia, Missouri, in 1948, and a third at Ashland, Nebraska, in 1952. In all three of these high-producing quarries, Kerford depends upon Deister Machine Company Vibrating Screens for accurate sizing, trouble-free performance, top production.

The newest plant, at Ashland, is equipped with two 5′ x 14′ 3-deck Deister Screens operating in tandem, and one single-deck 4′ x 12′ Deister. This is a limestone operation producing up to 1500 tons per day of concrete rock, mineral aggregates, base coarse material and agricultural limestone.

Says George Harper, Plant Superintendent: "We have not touched a bearing on the Deister Screens since they began operating in April 1952. I have never seen screens perform any better or require less care. We check the oil periodically and have had no trouble. Whenever my recommendation is asked on new equipment, it will be for Deister 100%."

Deister Type UHS Vibrating Screens provide high capacity and peak performance through the *exclusive opposed elliptical throw principle.* They feature a Life-Time Unitized Vibrating Mechanism, with two-bearing construction and full oil bath operation. Also, exclusively Deister are the adjustable screen panels, enabling the operator to increase or decrease screening angle at the feed or discharge end *independently* of the balance of the screening area. Write Deister today for Bulletin No. 54.

DEISTER

DEISTER MACHINE COMPANY
1933 EAST WAYNE STREET, FORT WAYNE 4, INDIANA

The Editor's Page

Safety Reached a New High in 1954

THE results are now in for the 1954 safety competitions of the cement, sand-and-gravel, crushed stone, slag, and lime industries. They show that the combined records of these industries set a new low in injury frequency, but not in severity. All in all, it was a good year for safety, indicating that the companies entered in these contests are steadily becoming safer to work for.

The annual report of the National Safety Council on the accident record of member companies in 1954 shows that industry in general had its eighth consecutive record safety year. Moreover, the 40 basic industry classifications reduced their combined frequency and severity rates to new lows of 7.22 and 0.80, respectively. Twenty-eight of these 40 basic industry classifications reduced their frequency rates, and half of them reduced their severity rates.

The portland cement industry in 1954 improved its already outstanding record. According to the National Safety Council's report, the cement industry had an injury-frequency rate of 3.38 injuries per 1,000,000 man-hours worked—11 percent under 1953. The severity rate was 0.92 per 1,000 man-hours worked—43 percent under 1953.

THERE are two safety competitions open to sand-and-gravel producers—that of the U. S. Bureau of Mines, which is open to all—and that of the National Sand and Gravel Association, which is also conducted by the Bureau of Mines, but which is open only to N.S.G.A. members. The former had 172 plants entered, and the latter had 141. Apparently only 31 non-member plants entered the Bureau of Mines contest. Results in both contests were, as might be expected, very similar. In the Bureau of Mines contest (its fifth) the injury-frequency rate was 22.2—slightly over 1953, but under the average for the competition. The severity rate was 3.2—slightly over the 5-year average. Of the 172 plants entered, 77 had no lost-time injuries; this was also a new record.

In the N.S.G.A. contest (its 26th) the injury-frequency was 21.957—the second-lowest in its history—and the severity rate was 3.417—better than 1953, but below the 3.947 average of the contest. Of the 141 plants entered, 57 had no lost-time injuries, another new record.

In the National Crushed Stone Association's safety competition, which is also conducted by the Bureau of Mines, and which is open to all N.C.S.A. members, the results were also good. The injury-frequency rate was 16.923—second lowest in the 29-year history of this contest. The severity rate of 3.227 was below that of 1953, but was only the sixth-best in history. Of the 67 plants entered 21 had no lost-time accidents in 1954.

The contest of the National Slag Association, conducted by the Bureau of Mines and open to all slag producers, had an injury-frequency rate of 13.896, the lowest in the six-year history of this competition. Here again the severity record was not good, the rate of 6.232 being considerably higher than in 1953 and over the 6-year average. A record number of plants, 24 of the 49 entered, had no lost-time injuries during the year.

The National Lime Association's 20-year old competition, conducted by the Bureau of Mines and open to all lime and roasted dolomite plants, had an excellent record in 1954. The injury-frequency rate of 14.279 was the lowest in the history of the contest. The severity rate of 1.748 was the third-lowest and far below the average for the competition.

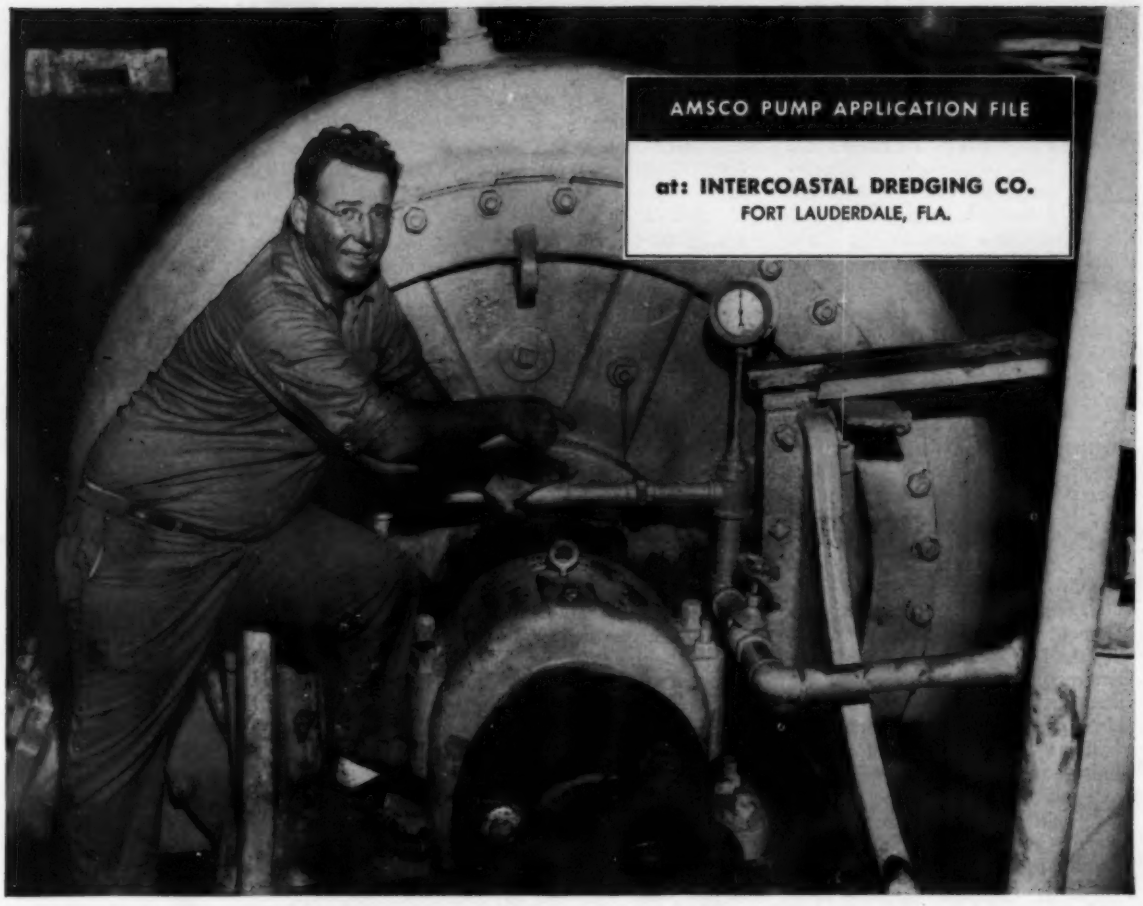
THE excellent safety records indicated in these competitions are encouraging, but what of the many producers not entered in these contests? According to the most authentic records, there are about 3,000 plants producing sand and gravel. Of these only 172 were entered in the Bureau's contest. The National Sand and Gravel Assn. has about 260 members, but only 141 were entered in its contest. There are about 1,600 crushed stone plants in this country, but only 67 of 136 member-plants were entered in the N.C.S.A. competition. The National Slag Assn. had one of the best participation records, with 49 plants out of a total of about 80 in the industry. The National Lime Association's contest also ranks high, with 51 of about 150 plants competing.

Adding up these figures shows that only 339 of the approximately 3,500 plants eligible to enter in these industry and association competitions actually entered the 1954 contests, and participation that year was at an all-time high.

THERE are many reasons why producers should work actively to make their plants as safe and attractive as possible for their employees. There is also the fact that an unsafe and dirty plant will have a high (and costly) turnover of help, and will be able to keep only workers who cannot hold jobs elsewhere. An unsafe plant is an inefficient plant and the public relations of such an operation are also necessarily poor.

Accidents are costly to the employer. There is the loss of the services of a skilled worker, the lost time of other workers, and the lowering of morale among them. A poor accident record also increases a producer's workmen's compensation insurance cost. Furthermore, the entire matter of safety may be taken out of the hands of industries and their associations, unless participation increases sharply. Labor unions are showing increasing interest in such matters, and would gladly add safety to their inducements to enroll more members. It is more likely, however, that the Federal Government would step in and enforce safety. Either of these eventualities is to be avoided if possible. Every producer, large or small, must start his own safety program at once, and should enter any contests for which he is eligible.

Walter E. Trauffer



"We're very pleased with our AMSCO® PUMP. It's up to our tight production schedule . . ."

That's the report given by Captain James J. Murray of the Intercoastal Dredging Co., a subsidiary of Coral Ridge Properties, in Fort Lauderdale, Florida.

Captain Murray operates the dredge "Dade" which is helping to convert swampland into highly desirable real estate along the Intercoastal Waterway in Fort Lauderdale. This dredge, using a rotary cutter, cuts canals 115 ft. wide, from 700 to 1400 ft. long and at least 14 ft. deep at right angles to the waterway. Sand and coral rock spewed up by the cutter are sucked through the Amsco pump, along a pipeline varying from 500 to 2000 ft. . . . dumped to form valuable landfills.

The Amsco pump averages 500 to 600 cu. yards of material (80% sand, 20% coral rock) per hour. More than ½ million yards of sand-coral mixture have been pumped since the 18" Amsco pump was installed. Intercoastal Dredging works on a tight production schedule, and that's why they are pleased with their reliable Amsco pump which keeps costly delays to a minimum.

In a normal 10-hour shift, the dredge "Dade" moves forward about 100 feet with its 18" Amsco pump working full time.

Whether your dredging operation is large or small, you can get an Amsco Dredge Pump to handle the job. Standard sizes range from 6" to 20" discharge openings. Larger sizes are also available. An Amsco Pump Engineer will be glad to discuss your requirements, or write for Bulletin 1052P giving full information and specifications on the Amsco line.

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Ill.

Washington News Letter

IN Washington, as in most of the rest of the nation, the principal subjects of conversation are the political and economic consequences of the unfortunate turn in the President's health. Nothing could have pointed up more dramatically the key status of the U. S. Presidency, in national as well as in world affairs.

Although there is much talk that the government is being run by a committee which includes Vice-President Nixon, Presidential Assistant Sherman Adams, Treasury Secretary George Humphrey and such other officials as the particular commentator cares to add, it is becoming increasingly evident that no such committee really exists.

As always, each Cabinet member and agency head is running his department as he sees fit, in accordance with the legal limitations imposed by Congress. Before the President became ill, each of these persons decided practically all major policy questions within his area of responsibility—and even a few outside that area—on his own. No essential change in this procedure has occurred. Certainly, he is unlikely to take up such matters with a vice-president, whose powers are, at most, ambiguous, with another Cabinet member, whose powers are equal to his own, or with a member of the White House staff who appears to have earned a reputation for being difficult.

Matters which absolutely require the President's decision will probably await his recovery. The intervening period is likely to prove how few matters really require his personal attention, and how long the remainder can be postponed before the situation becomes critical. Perhaps it will produce the ways and means for reducing the almost unbearable burden which has wearied too many of our ablest presidents.

Fortunately, at least with respect to the economic situation, there is nothing on the scene which demands the President's immediate or early attention. Arthur P. Burns, the chairman of the President's Counsel of Economic Advisers, has just reported that after a small setback the economy has again demonstrated its capacity for vigorous growth in 1955.

The gross national product—that is, the dollar value of the nation's total output of goods and services—is at present running at a rate of $390,000,000,000, over $20,000,000,000 higher than in the prosperous year of 1953. Both civilian employment and income disbursed by private industry are also higher than the previous 1953 record-breaking totals.

For some time now, Dr. Burns has been worried about inflation, and apparently his fears have not abated. He feels that the government had to take steps which were unpopular with particular groups whose potential profits were affected by these measures. It is clear that Dr. Burns would have preferred even stronger anti-inflationary measures. He finds that those which were taken succeeded to a considerable degree in helping us to escape the excesses of prosperity—but not fully.

Only in one area does he fail to view the near term future with optimism, and that is in the area of agriculture. Not only the Administration economists, but also the Republican politicians are worried about this matter. It is no wonder, therefore, that the Federal Reserve Board took a very careful look at the agricultural situation. The results they came up with are far less dismal than was generally expected.

They, like everyone else who has studied the situation, found that farm prices and income have declined this year, continuing the downward movement from the advanced levels reached early in the Korean War period. They make the point, however, that the basis for the comparison generally used, the World War II and early post-war period, is a very inflated one. That was the time when, in response to urgent world-wide demands, farm production expanded rapidly and prices of farm products rose sharply. Not unexpectedly, the foreign demand has declined.

Domestic consumption, however, has continued to grow. This expansion has not been rapid enough to absorb all the produce. As a result, federal price support holdings have risen substantially. Even this development shows some signs of slowing down. The rise during the last year was less rapid than in earlier years.

So far the picture for farming as a whole is far from bright. But the Federal Reserve Board has noted that the farm population has been falling while the output per farmer has been rising very rapidly. From about 1948 to 1955, the average production per person engaged in agriculture has increased by one-third. As a result of these trends, the *per capita* farm income has been maintained at relatively higher levels than total farm income. *Per capita* farm income is only about 10 percent below the 1951 peak.

Farm spokesmen are fond of comparing the current situation with that of the 1920's, when farmers were suffering a severe depression while the rest of the country was enjoying a high degree of prosperity. The above information raises some serious questions about the validity of that comparison.

It will be remembered that the 1920's were characterized by a rapid decline in the value of farm real estate, which occasioned a wave of foreclosures and farm bankruptcies. The Federal Reserve Board finds that just the opposite is occurring today. Farm real estate values have been strong. Over the last year they have risen so much that they are now back to their all-time peak. Much of the cause of this rise is due to a high demand for land to increase the size of existing farms, in order that they may be operated more economically.

People are beginning to realize that farming has finally emerged from a "way of life" to just another form of economic activity in which only the efficient deserve to survive. The evidence points clearly to the fact that the efficient farmers are doing well, while the inefficient are leaving the farms to turn to other activities which may yield them higher returns. This is hardly a trend to be deplored.

The economic situation in agriculture appears to be far less serious than it is generally pictured. Politically, also, it may be far less important than is generally believed.

An announcement was made recently of the opening of a new ground gypsum mill near Lost Hills, Calif., by the Superior Gypsum Company. Equipped with a primary crusher, a hammer-type mill, and screens, the 40-t.p.h. capacity plant is the only one of its size and type in central California. The product will be available to customers in bulk or bagged.

for "Manufacturing" Sand

★ **PRODUCES SPECIFICATION SAND**

★ **EXTENDS LIFE OF NATURAL DEPOSITS**

An Allis-Chalmers rod mill converts stock piles of unsalable material into *specification* sand. It prolongs the productivity of natural reserves. It produces specification sand in areas where natural sands are unusable, thus eliminating transportation expense and inconvenience.

Rod Mill Advantages — Processing specification sand from rock, coarse aggregate and natural sand is a particularly abrasive and difficult job. That's why Allis-Chalmers rod mills are so well suited for the job. Basically the A-C rod mill is a simple, rugged machine . . . a grinding mill that requires little attention yet provides continuous, dependable performance. Replacing worn grinding media is merely a matter of inserting a couple of rods. Mill liners are easily replaced.

Produces Cubical Product — Rod mill action breaks long, flat particles and knocks rough corners off other particles. This results in a desired cubical product . . . a product that has a definite effect on concrete strength and the amount of cement required.

Affords Specification Flexibility — You can meet varying specifications with an Allis-Chalmers rod mill by changing the rod charge, feed and feed water. Once mill is adjusted to produce a required product, it needs very little attention.

For complete information on Allis-Chalmers rod mills, see your A-C representative or write Allis-Chalmers, Milwaukee 1, Wisconsin, for Bulletin 07B6718A.

A-4638

ALLIS-CHALMERS

A PICTURE REPORT OF

INTERNATIONAL POWER *in action!*

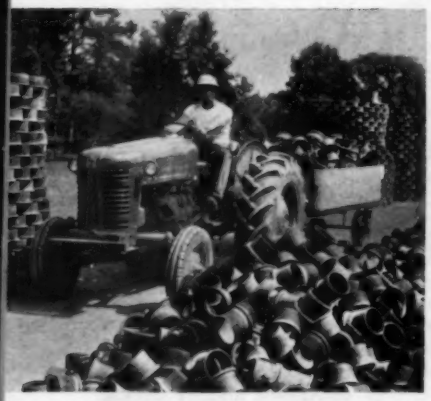
Boosting job production everywhere

"1/3 more overburden daily than competitive crawlers" . . . that's the report from Merkli Brothers Coal Company, Beaver, West Virginia, on their TD-24. Unit is stripping 40 ft. of sandstone and shale to uncover a 12 to 51-inch coal seam. "It has better balance and visibility than other tractors," says Partner Henry L. Merkli. "It costs less to maintain; takes less time to grease, too."

Strips for barite ore—Near Cartersville, Georgia, Paga Mining Company's two TD-24's average a 4,000 ft. stripping cycle every 10 minutes. This includes time to self-load 15 cu. yds. Units are removing 50 ft. of overburden to reach a 15 ft. seam of 9 to 30% barite. They move 2,000 to 2,500 cu. yds. of spoil per 10-hour day. The plant produces 400 tons of barite in the same time, for use in chemical, paint, and oil industries.

Crushes gypsum—Near Avenal, Calif. Superior Gypsum Company's International-powered crusher produces 300 tons of gypsum per 8-hr. day. Material is used to neutralize high-alkali irrigation water.

1 more trip hourly—Fast loading and acceleration help 18½-yd. Payscraper make one more trip hourly than other self-propelled scrapers used by W. E. O'Neill Construction Company, Gary, Indiana. Cycle length averaged 2½ miles; material was mostly sand. For hauling ore, scraper interchanges with bottom-dump wagons.



Tows 1500-lb. loads and often 4500 lbs. Utility of IH wheel tractors is now unsurpassed. This unit tows castings for a plant near Longview, Texas . . . others do loader, fork-lift, similar tasks.

No repairs in 2 years of continuous crusher service—that's the record of the International 125 hp diesel shown above. Average output, in gravel pit near Bartlett, N. H., is 100 cu. yds. hourly.

Rugged in rugged rock—"TD-6 is ideal for opening underground mines," says M. McDonald, Kiabob Uranium Corp, Green River, Utah. "It gets around fast in narrow tunnels, yet brings out BIG loads."

International Industrial Power

INTERNATIONAL HARVESTER

A machine size for every job . . . see your nearest INTERNATIONAL DISTRIBUTOR for details.

PAYSCRAPERS
13 yds. and 18½ yds.

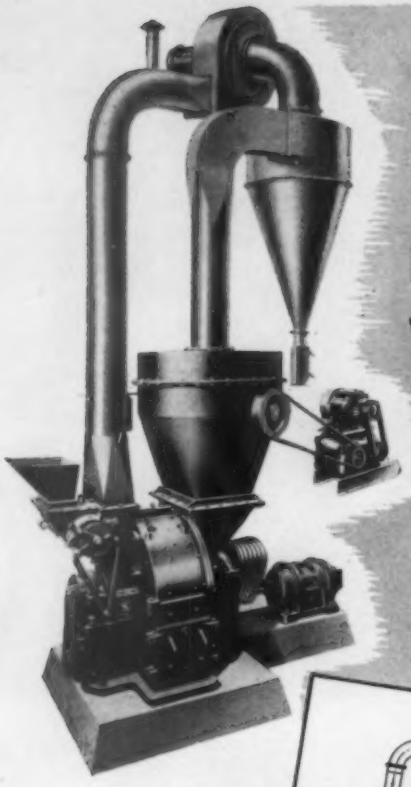
WHEEL TRACTORS
4 Models . . . . 9 to 59 dr

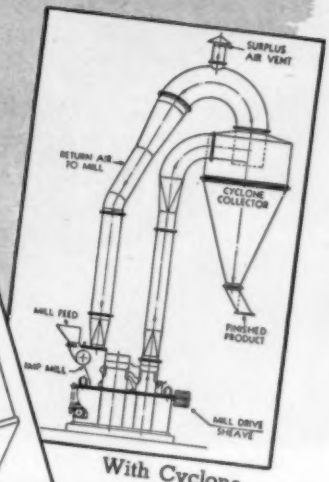
CRAWLER TRACTORS
3 Models . . . . 40 to 200 hp

DIESEL, GAS ENGINES
18 Models . 18½ to 200 hp

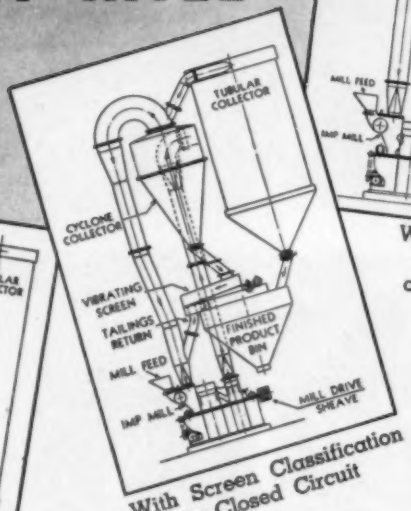
ALSO: International Draft Loaders . . . International Scrapers, Bottom-Dump Wagons . . . and International Superior Pipe-Boom Tractors.

Scores of special
GRINDING PROBLEMS
Handled by the versatile Raymond
IMP MILL

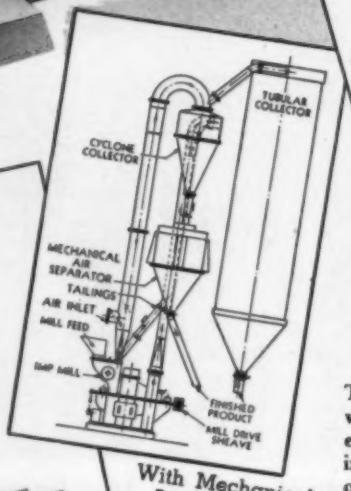




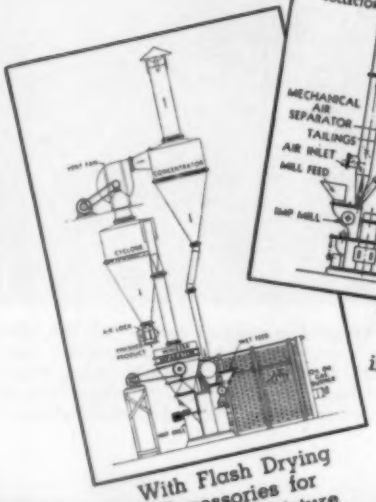
With Cyclone Collector and Piping



With Screen Classification in Closed Circuit



With Mechanical Air Separator in Closed Circuit



With Flash Drying Accessories for removing moisture while pulverizing

Write for Raymond CATALOG No. 77

This multi-purpose unit provides a flexible installation which can be arranged to fit your plant layout and equipped to handle almost any combination of pulverizing, blending, classifying, conveying and/or drying operation.

These typical flow sheet illustrations give you some idea of the adaptability of the Raymond IMP MILL. It is a clean, dust-free, automatic system for low-cost production of the softer non-metallics in powdered form, such as clays, pigments, filters, diatomaceous earth, phosphate materials, gypsum and lime products.

Tell us your requirements—a Raymond Imp Mill, tailored to your job, may be the economical answer to your problem.

COMBUSTION ENGINEERING, INC.
Raymond Division

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LOAD ROCK IN NARROW CUTS

Clearing rock from narrow cuts is just one of the numerous tough jobs which the heavy-duty Eimco 105 is particularly suited.

The Eimco 105 Tractor is a completely new conception in tractor design. Every part of this tractor is so superior to the corresponding part on conventional tractors that it must be seen and inspected to be appreciated. Here are a few of the items that you must compare: (1) The transmission — located in front for easy accessibility and containing all gearing and clutches for speed changing and reversals and steering, (2) Torque converter drive without master clutch, (3) Front position for the operator to permit full visibility, (4) Only two small handles to control all motions of the machine through the power shift transmission, (5) Two final drives to permit easy maintenance and independent operation of each track, (6) One piece cast alloy steel track rollers, (7) Heavy alloy steel construction throughout, (8) Heavy cast alloy-steel track pads and many other items all standard equipment on Eimco Tractors.

In addition to these features there are many other features of superior quality that are not outwardly visible, such as: Clutches so designed that they never need adjustment, All shafts and gearing work in anti-friction bearings of the ball or roller design, Bearings fit into individual alloy steel cages, Full pressure lubrication to all points in the transmission, Unit construction for easy service, Heavy, short shaft design, Precision heat treatment of all parts and many other superior features.

Eimco invites you to operate the 105 Tractor, see for yourself how this new design and truly modern tractor takes all the work out of operating this type of equipment, permits a man to do more efficient work all day without tiring, allows him to see what he's doing without standing up.

The Eimco Tractor has proved its superiority on hundreds of jobs. You must investigate and compare this tractor with ANY other before you buy.

THE EIMCO CORPORATION

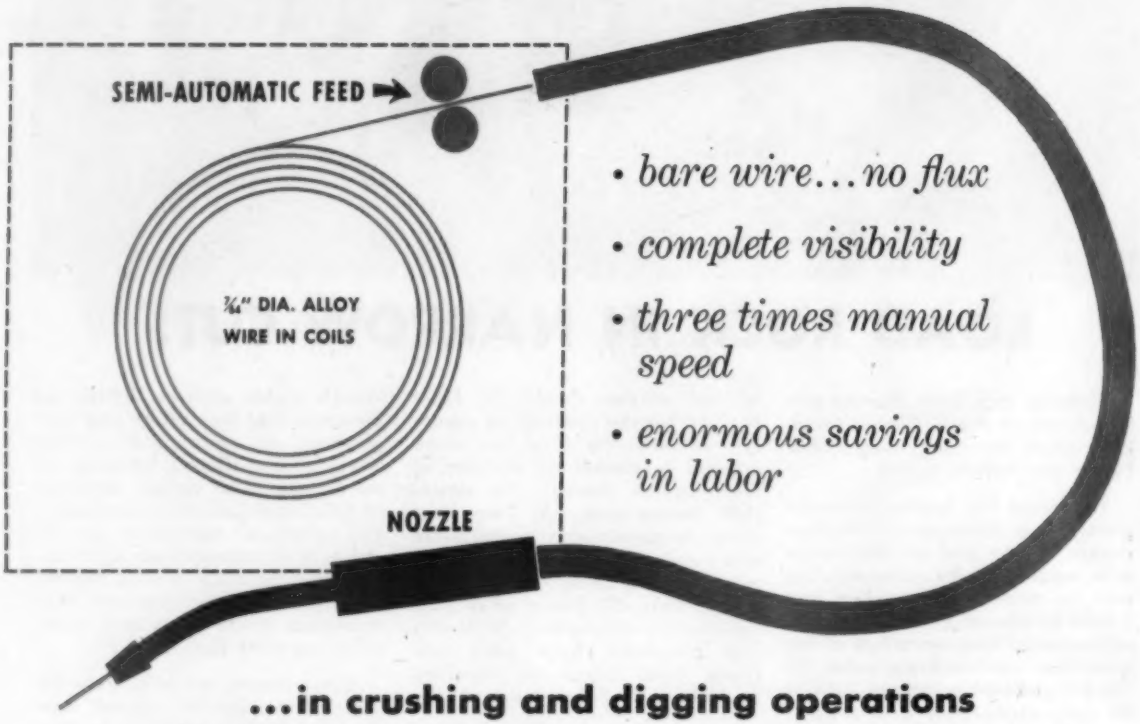
Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Kellogg, Ida. Baltimore, Md. Pittsburgh, Pa. Seattle, Wash. Pasadena, Calif. Houston, Texas Vancouver, B. C. London, England Gateshead, England Paris, France Milan, Italy Johannesburg, South Africa

EIMCO

B-148

SEMI-AUTOMATIC with the NEW Alloy Tubular



...in crushing and digging operations

This is a totally new hard-facing method utilizing the welding speed of the semi-automatic machine to produce sound deposits of wear-resistant alloys. The wires run bare, using no flux, so that the weldor enjoys full visibility at all times...deposition rates at normal welding currents (200 to 300 amps) are double or triple those of the manual method...standard semi-automatic equipment is easily converted to handle Stoody wires.

Maintenance time and welding costs are reduced through increased service life provided by Stoody alloys and the greatly increased welding speed. Weldors like the semi-automatic, find it easy to operate with less fatigue.

Your Stoody dealer (check the "yellow pages" of your phone book) will be glad to give you full information, plus a demonstration on your own equipment without obligation. Or write to the company for literature and the name of your nearest dealer.

STOODY COMPANY

HARD-FACING

Stoody Wires

ALL TYPES OF CRUSHERS: *Ideal applications for Stoody 100 because of excellent wear resistance and impact strength. Semi-automatic application greatly speeds welding.*

Stoody 100 ...a high chromium alloy wire for equipment subject to severe abrasion and impact. This is similar to Coated Tube Stoodite. Used on crushers, buckets, rippers, augers, tool joints. Deposits 10 to 18 pounds per hour.

Stoody 121 ...a medium alloy material with excellent resistance to abrasion and impact. This is similar to Stoody 21. For bucket teeth, shovels, grizzlies, loader lips, crushers. Deposits 9 to 16 pounds per hour.

Stoody Nickel Manganese...produces a Hadfield manganese deposit for build-up of all manganese parts—crushers, buckets, shovels, teeth—preparatory to hard-facing. Deposits 4 to 7 pounds per hour.

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SHOVEL TRACK PADS: *Use of Stoody Manganese applied by semi-automatic welder cuts time on maintenance.*

SHOVEL BUCKETS: TEETH, LIPS, ADAPTERS, ETC., *Stoody 121 gives good wear resistance, quickly covers wearing areas on all buckets.*

BULLDOZER END BITS: *Can be hard-faced in one third of time required by manual process. Stoody 121 is recommended.*

CONVEYOR SCREWS: *Semi-automatic welding cuts time and labor on large surfaces. Stoody 100 is used for best wear resistance.*

CP Rotary Compressor...

A Real Work Horse On Wheels

If your quarrying operation calls for a mobile compressor that can be easily moved from spot to spot over very rough terrain and still maintain high operating efficiency, you need a dependable Chicago Pneumatic Power Vane Rotary.

The easy-towing CP Rotary Compressor is highly maneuverable because of its spring suspension, automotive steering, tilt operation and over-all lightweight and compactness. And its efficient oil injection system provides copious lubrication during off-level operation, yet oil consumption is low and air is delivered practically oil free. A variable speed capacity regulator helps prolong engine life and reduce wear and tear . . . increases over-all economy. For more information write *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.*

Capacities:
125, 210, 365, 600 and 900 cfm.

Chicago Pneumatic

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

News of the Industry

Lehigh to Add Fourth Kiln To Double Original Output At Bunnell, Fla., Operation

Although clinker production began last June in the third kiln added to Lehigh Cement Portland Cement Company's Bunnell, Fla., plant, officials of the firm have already launched plans to double the plant's original capacity by adding a fourth kiln. (When the third went into production, capacity was increased by 50 percent.)

Raw material storage at Bunnell has been enlarged by extending the building and crane runways to the east. Raw grinding capacity has been increased by the addition of two compartment mills. The third kiln, a duplicate of the first two, required two additional feed tanks, a Fuller reciprocating-grate cooler, a second kiln stack, kiln feed and discharge end buildings, a third fuel oil storage tank, and additional oil-burning equipment.

Other items already completed in the expansion program include 24 finished-cement storage silos, the extension of the covered clinker storage space, a new compartment mill in the finish department, a pneumatic transport system for this mill, a separator, an air cooler, dust collectors, conveying equipment in the packhouse, and a new rail spur.

The new kiln, which will be a duplicate of No. 3, will be served by the new stack and kiln buildings. Requirements for shell will necessitate new excavating equipment, additional raw-grinding equipment, blending tanks, a clinker cooler, and another finish-grinding mill.

Herbert J. Whitten Retires From Warner Company Post

Herbert J. Whitten, who was formerly vice-president in charge of the Lime Division of the Warner Company, Philadelphia, Pa., retired from active duty on June 30. At President John Curtin's request, he will handle special assignments and will continue to serve as a director of the firm.

Mr. Whitten spent most of his 39 years with the company in its sand-and-gravel department before being transferred to the Lime Division. In 1933 he became general superintendent of the Philadelphia yards, and subsequently general plants manager, with authority for production at the Van Sciver, Terminal, Cedar Hollow, and McCoy plants. In 1947 he was named vice-president in charge of the Lime Division, which includes the Cedar Hollow, Bellefonte, and Union Furnace lime and stone operations.

Wyandotte Chemicals Plans Alpena Quarry Modernization

A multi-million dollar program for the enlargement and modernization of its Alpena, Mich., quarry has been announced by the Wyandotte Chemicals Corporation. The Alpena quarry produces limestone for use in the firm's chemical manufacturing plants in Wyandotte, Mich., for the Huron Portland Cement Company's mill at Alpena.

Wyandotte officials said plans call for the installation of new primary and secondary crushers on the quarry floor, and the latest type of conveyor equipment to move the crushed rock to the surface has been purchased. Potential ultimate capacity will permit doubling the quarry's present rate of output.

New equipment installations are scheduled to begin early in 1956, and completion is expected to be announced in the spring of 1957.

Plan for $7,000,000 Plant At Milwaukee Location Announced by Marquette

Officials of the Marquette Cement Manufacturing Company have announced that the firm will build a plant in Milwaukee, Wis., which will produce 1,250,000 bbl. of cement annually to serve northern Illinois and Wisconsin markets. Cost of the new facility will be approximately $7,000,000.

This project is a part of a major expansion program announced earlier this year. An alternative for expansion at the company's Oglesby, Ill., operation now has been abandoned.

According to W. A. Wecker, Marquette's president, the new plant will be erected on an 18-acre site in Milwaukee's industrial dock area near Lake Michigan. Mr. Wecker also announced that the first "double-pass" Lepol kiln in this country will be installed in the plant. This type of kiln features automatic collection and re-use of fine materials and heat which would otherwise escape with kiln exhaust gases. The kiln will be only 165 ft. long, instead of 450 ft., the usual length for kilns of comparable capacity.

Storage silos with a capacity of 250,000 bbl. of cement, as well as loading and shipping facilities will be included.

Coming Events

January 11-14, 1956—Miami Beach. 54th annual convention and exhibit, American Road Builders Association. Miami Beach Auditorium.

January 23-25, 1956—New Orleans. 36th annual convention, National Concrete Masonry Association. Roosevelt Hotel.

January 29-February 2, 1956—Chicago. 37th annual meeting, Associated Equipment Distributors. Conrad Hilton Hotel.

February 13-16, 1956—Chicago. 40th annual convention, National Sand and Gravel Association, 26th annual convention, National Ready Mixed Concrete Association, and combined exhibit. Headquarters, Conrad Hilton Hotel; exhibit, Coliseum.

February 15-17, 1956—Chicago. Annual convention, National Agricultural Limestone Institute, Inc. Blackstone Hotel.

February 20-22, 1956—Chicago. 39th annual convention and biennial exhibit, National Crushed Stone Association. Conrad Hilton Hotel.

New Shoals, Ind., Facility Of Natl. Gypsum Opened On Official Visitors' Days

National Gypsum Company held open house on September 21 and 22 at the firm's new gypsum products plant at Shoals, Ind., during official dedication ceremonies. Melvin Baker, chairman of the board, dedicated the facility to the promotion and preservation of the American free enterprise system by signaling the raising of the American flag.

Dealers in the company's Gold Bond products were guests at the plant on September 22. More than 3,000 dealers from Indiana, Ohio, Illinois, Tennessee, and Kentucky were invited to attend Customers' Day.

Martin County received an economic shot in the arm with the establishment of the plant for, as Mr. Baker pointed out, the plant has a weekly payroll of $15,000 for the 200 persons employed. Demand for goods and services for plant operation were estimated at $12,000 daily.

Jan.-Oct. Construction Totals Surpass Previous Records

Heavy construction chalked up $420,000,000 during the third week of October, to bring the total for the first 42 weeks of 1955 to a record $15,365,000,000. This figure is 32 percent above that for the comparable period in 1954 and 17 percent higher than the previous record total in 1952.

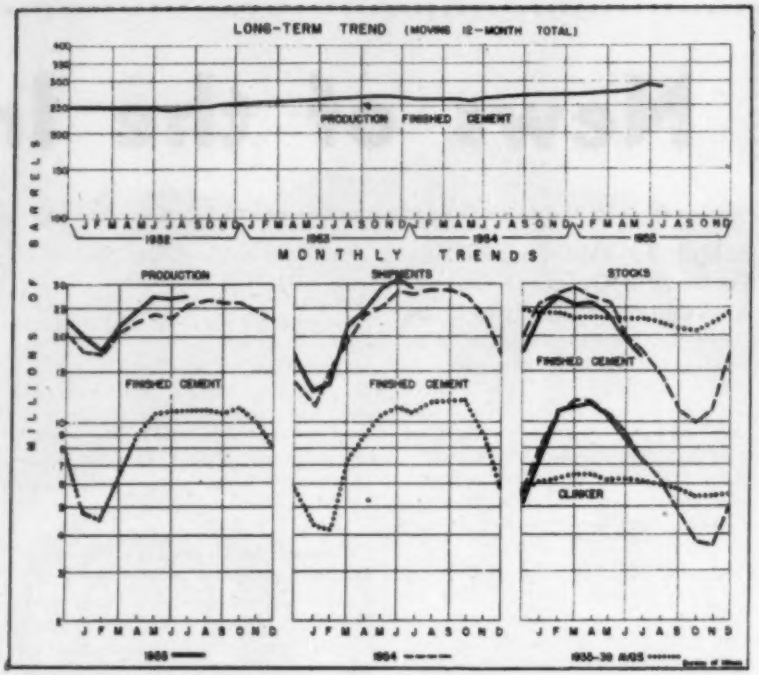
Sparked by mass housing and industrial and commercial building, private construction continued its October upsurge. Awards for the first three weeks of October averaged $272,000,000 per week, the fastest pace since last May. Federal awards for the first 42 weeks of 1955 are 35 percent ahead of last year, while state and municipal volume is up 9 percent for a record high.

Ladd Lime Products Formed To Operate Georgia Quarries

Reopening of the lime quarries near Cartersville, Ga., recently took place by the newly-formed Ladd Lime Products Company.

Production began early in October after extensive renovation of the existing plant. The facility was formerly owned by a group of Raleigh, N. C., businessmen.

Officers of the new firm include: W. W. Mundy Jr., president; Dan B. Simon, executive vice-president; B. W. Edwards, secretary-treasurer; and J. H. Wofford Sr., assistant secretary-treasurer and office and sales manager. Others listed as directors include: G. H. Edwards, John H. Lopez, and John P. Pickett.


LONG-TERM TREND (MOVING 12-MONTH TOTAL)
PRODUCTION FINISHED CEMENT
BARRELS
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1952
1953
1954
1955
MONTHLY TRENDS
PRODUCTION
SHIPMENTS
STOCKS
MILLIONS OF
FINISHED CEMENT
FINISHED CEMENT
FINISHED CEMENT
CLINKER
J F M A M J J A S O N D
J F M A M J J A S O N D
J F M A M J J A S O N D
1955
1954
1935-39 AVG

SUMMARY—Production of finished portland cement in July, 1955, as reported to the U. S. Bureau of Mines, totaled 27,332,000 barrels—an increase of 7 percent over the July, 1954, figure. Mill shipments totaled 29,124,000 barrels—an increase of 5 percent more than in July, 1954—while stocks of 16,720,000 barrels of finished portland cement on hand July 31, 1955, were 5 percent less than on the same date last year. Clinker production during the month totaled 25,945,000 barrels—an increase of 8 percent over the July, 1954, figure.

PRODUCTION—One hundred and fifty-seven (157) plants in 37 states and Puerto Rico reported a production of 27,332,000 barrels of finished portland cement during July, 1955, as compared to a production of 25,482,000 barrels during the same month last year.

Clinker production during the month was 25,945,000 barrels, compared to 24,077,000 barrels during July, 1954.

Clinker figures for 1955 are not strictly comparable with those of 1954 and earlier years because producers are now asked to report clinker in terms of the number of barrels of finished portland cement that could be produced from the quantity of clinker in question, whereas previously the unit of measure was the 376-lb. barrel.

Separate data on high-early-strength (Type III) by districts and prepared masonry cements appear in this year's reports. Production of high-early-strength portland cement in July, 1955, totaled 854,000 barrels, an increase of 13 percent over the July, 1954, production. The output of prepared masonry cement was 1,373,000 barrels of 376 lb. each.

SHIPMENTS—Mill shipments of finished portland cement were 5 percent higher than in July, 1954, and totaled 29,124,000 barrels. This figure and the district totals that comprise it are not strictly comparable with mill shipments of previous years because they do not include, as in the past, the number of barrels of finished portland cement used in the manufacture of prepared masonry cements. The quantity so used is shown in a footnote.

Shipments in July were higher in 14 districts and lower in six. The greatest increases were registered in the Coolorado-Arizona-Wyoming-Montana-Utah-Idaho and the western Missouri-Nebraska-Oklahoma-Arkansas districts. Substantial increases were made in the Ohio, western Pennsylvania-West Virginia, Kansas, southern California, Oregon-Washington, and Puerto Rico districts. The greatest decrease was in the Alabama district.

Mill shipments of high-early-strength portland cement in July, 1955, totaled 989,000 barrels. Nearly half of these shipments were from mills in the eastern Pennsylvania-Maryland, and the Michigan districts.

Mill shipments of prepared masonry cement in July, 1955, totaled 1,427,000 barrels. Half of these shipments were from mills in five districts—eastern Pennsylvania-Maryland, Indiana-Kentucky-Wisconsin, Michigan, New York-Maine, and Virginia-Georgia-Florida-Louisiana-South Carolina-Mississippi. Prepared masonry cement data are shown in equivalent barrels of 376 lb. each to maintain uniformity with the portland cement data.

STOCKS—Mill stocks of 16,720,000 barrels of finished portland cement were on hand July 31, 1955—5 percent less than July 31, 1954. Stocks of clinker on hand at the end of July 1955, were 7,039,000 barrels—a decrease of 3 percent less than the stock on hand July 31, 1954.

The Royal Architectural Institute of Canada during its recent annual assembly in Halifax awarded one of the two top international advertising prizes for excellence in advertising design to the Perlite Division of Great Lakes Carbon Corporation, Los Angeles, Calif.—the only United States concern so recognized. The company was awarded second prize, according to news received by Walter A. Watson, advertising manager.

Eagle complete washing-classifying-dehydrating section is paying-off at plant of Walter J. Hieb Sand & Gravel, Inc., Utica, Indiana, on the Ohio River. Sparkling clean material—any blend they want.

Material at Walter J. Hieb's plant, is dredged—an Eagle "Swintek" dredging ladder boosts production by eliminating shut-downs from clogged lines and increasing ratio of solids to water pumped.

EAGLE Aggregate Washing-Classifying Equipment PAYS OFF for Hoosier Producers!

SAND and gravel producers all over Indiana have solved their material washing, classifying and dewatering problems with Eagle Equipment. A few typical Indiana installations are pictured from among the dozens of successful users.

Here's why Eagle Equipment solved their problems:

- Eagle pioneered aggregate washing and classifying—every installation is based upon the broadest experience in the field.
- Eagle builds the broadest line—single and double screw fine material units and coarse material units and log washers in a complete range of sizes—the installation fits your needs—you don't fit your needs to what is available. You are assured of meeting specifications.
- Eagle's service policy is good for the life of the equipment. Field engineers are always available for consultation or to appraise a producer's needs.
- Eagle's pilot washing-classifying plant at the factory provides for continuous experimentation—all equipment and methods are pre-tested—the buyer is not the "guinea pig." A sample of a producer's material is tested by our engineering department to determine his needs.

Investigate, now, what Eagle Equipment can do for you!

Eagle Water Scalping-Classifying Tank at Fidler Sand & Gravel, Inc., Goshen, Ind., removes excess water and pre-classifies material ahead of screw units. Coarse material screw is equipped with trash remover.

Knox County Sand Co., Vincennes, Ind., produces material to rigid specifications with Eagle complete washing-classifying-dehydrating section at their highly efficient plant.

Western Indiana Sand & Gravel Co., Lafayette, Ind., solved their problem with Eagle water scalping-classifying tanks and Eagle screw units, at this and their South Bend plant.

EXPERIENCE, PROGRESS, SERVICE, SINCE 1872

EAGLE IRON WORKS

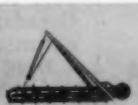
133 Holcomb Ave., Des Moines, Iowa

FINE MATERIAL WASHERS

WATER SCALPING—CLASSIFYING TANKS.

COARSE MATERIAL WASHERS

LOG WASHERS



"SWINTEK" DREDGE LADDERS

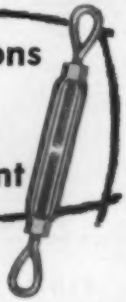
COMPLETE DREDGES

BREAKER BALLS & PILE HAMMERS.

Turnbuckle Allows Easy Take-up

Several important advances in design by the makers of famous Laughlin Turnbuckles offer added safety and efficiency to turnbuckle users. For fast, easy take-ups with a wrench, Laughlin turnbuckle bodies have extra-heavy hex ends. An exclusive eye design that takes the ear of a shackle one size smaller, gives the Turnbuckle double usefulness Laughlin's exclusive eye design is stronger than conventional eyes because it conforms more closely to the lines of pull. This design also makes it easier to attach thimbles and other fittings. Redesigned Laughlin hooks have added heft at points of greatest stress. Exceptionally strong, the ¼" hook is actually stronger than most ⅝" hooks. Hot galvanized and forged from special forging steel with weldless construction, Laughlin Turnbuckles are offered in a complete range of end fittings in sizes from ¼" x 4" to 2¾" x 24". A reference chart in Laughlin's free catalog lets you select the proper size Turnbuckles for the wire ropes, chains or assemblies you use. For greater safety and strength, always specify world-famous Laughlin Turnbuckle..

Combinations For ANY Turnbuckle Requirement



For free catalog, write:

THOMAS LAUGHLIN DIVISION
American Hoist & Derrick Co.
St. Paul 1, Minnesota
makers of world-famous Crosby Clips

World's most complete line of fittings for wire rope and chain

St. Lawrence Cement Breaks Ground Near Toronto for $15,000,000 Plant

A scale model of the new St. Lawrence Cement Company plant which is being constructed near Toronto, Ont.

Ceremonies held on September 22 marked the start of construction of a $15,000,000 cement plant being built by the St. Lawrence Cement Company. The plant is located at Clarkson, Ont., 15 miles west of Toronto.

Production at the rate of 1,500,000 bbl. (Can.) will begin when the plant is completed at the end of next year.

Dr. Bernard Ulrich, general manager of the firm, said the new Clarkson plant will be a handsome, modern, steel-and-concrete structure on landscaped grounds. Mechanical and electrostatic precipitators will be installed to assure almost dust-free and smokeless operation. Initially the facility will employ some 150 persons around the year, including about 50 technical and engineering personnel.

Engineering drawings for the second kiln will begin as soon as drawings for the first kiln are completed. The plant layout provides for expansion to three kilns, and sufficient land has been acquired—175 acres—for ultimate expansion to six kilns.

The new plant will duplicate many of the advanced design features built into the company's Villeneuve plant. Among these features are the following: a 402-ft. kiln with an average inside diameter of 12½ ft., said to be the largest in Canada; an ingenious "dust-return" system; and overhead concrete silos.

Dust in the kiln is burned along with powered coal in the unusual "dust-return" system. Engineers for the firm said that a half pound of dust is burned with every pound of coal, increasing efficiency and guaranteeing a clean, dust-free operation. The overhead silos will be mounted on a large concrete slab floor 60 ft. above ground, which is supported by slender, steel-and-concrete pillars.

Access to frontage on Lake Ontario has been purchased, and present plans envisage construction of a company dock large enough to accommodate deep-sea shipping. The site also affords excellent road and rail facilities. The land on which the plant is being erected was formerly the site of the largest strawberry farm in Ontario.

Swiss and Canadian capital are invested in the St. Lawrence Cement Company. It is controlled by Holderbank Financiere S.A. of Switzerland, a 50-year-old cement manufacturing firm which operates 21 other plants throughout the world. All the facilities owned by the group account for 104,000,000 bags of cement annually. Canada's total consumption of cement amounts to about 22,000,000 bbl. per year.

Workers at the two Bartow, Fla., phosphate plants of International Minerals and Chemical Corporation returned to their jobs on October 3 after a strike which began June 1. A F L spokesmen accepted a four-year contract with a wage increase of about 10½ cents an hour after being told that new men would be hired if the strike were not settled by October 1.

Penn-Dixie Cement Corp. Plans $4,500,000 Expansion At W. Des Moines Plant

B. W. Druckenmiller, president, Penn-Dixie Cement Corporation, has announced a $4,500,000 expansion program at the company's West Des Moines, Iowa, plant.

Installation of a new 11- by 375-ft. kiln with related equipment will increase annual capacity by 71 percent—from 1,368,000 to 2,340,000 bbl. Electrical precipitators, commonly known as dust collectors, will be installed on the old stacks, as well as on the new units, to eliminate dust from the kiln stacks. Work will start immediately and is expected to be completed by August, 1956.

U. S. Gypsum Raises Output 60% at New Braunfels, Tex.

United States Gypsum Company officials have reported that production of high-purity indutsrial lime at the firm's New Braunfels, Tex., plant has been increased by more than 60 percent through the installation of extensive new facilities.

The new installation, consisting of a specially designed rotary kiln, a secondary screening and crushing plant, and service unit has improved operational efficiency and economy.

U. S. Gypsum has stepped up its production of industrial lime to meet the ever-increasing demands of the rapidly expanding chemical industries of the Southwest, whose requirements for high-purity lime are at record-high levels.

Such lime is used in the manufacture of diethylene-glycol, a synthetic industrial chemical used in the manufacture of anti-freeze, liquid refrigerants, plastics, and new synthetic fabrics. Lime is also utilized in the processing of sulphur, the manufacture of paper and lubricants, the refining of sugar, and the purification of city drinking water.

New production facilities center around the specially designed rotary kiln, which is equipped with the latest developments in instrumentation and automatic controls to assure the precision operation necessary for turning out products to exact specifications.

Three cement plants are in the process of establishing branches in various parts of Peru. One concern, Cia. Nacional de Cemento Portland, will locate in Pacasmayo; another, Cementos Andines, will build close to Tarma; and the third, Cia de Cemento Chiclayo, proposes future expansion in the north of Peru.

Drivers last longer...

when heavy-duty trucks

use J-M Brake Blocks

Experienced operators know that when their vehicles are equipped with Johns-Manville Brake Blocks they can handle crushing loads without personal danger.

That's because these rugged, durable J-M Brake Blocks are engineered for the job . . . and designed for dependable performance plus maximum service life on trucks, shovels and heavy machinery.

They are "standard parts" on many famous makes of heavy-duty units. For fast, easy replacement, they are now available in Johns-Manville Assembled Sets that put new safety into your equipment.

See your Johns-Manville Distributor for data on J-M Brake Linings and Clutch Facings for industrial equipment, or write Johns-Manville, Box 60, New York 16, N. Y.

Johns-Manville Industrial Friction Sets are available in a wide range of molded or woven, rigid or flexible asbestos materials.

Johns-Manville

INDUSTRIAL FRICTION MATERIALS

ACCURATE BURNING CONTROL IS AIDED BY G-E ADJUSTABLE-SPEED MOTORS (weather-covered by customer)

General Electric systems and engineering services help

Cut costs of plant expansion as cement

The cement industry is growing fast. Nationwide highway programs and growing uses of cement in the building industry are greatly accelerating the demand. Industry forecast: 25 to 30% expansion in the next five years!

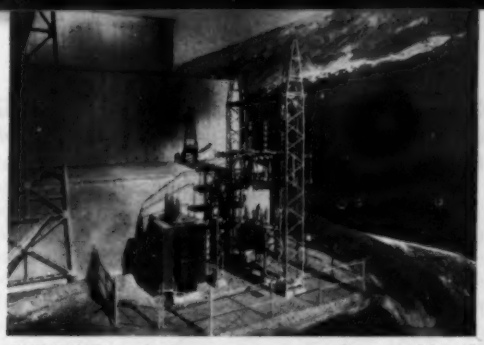
In your plans for expanding or modernizing existing facilities or building a new plant to meet growing cement demands, General Electric systems and engineering services can help save you time and money. G-E systems are engineered to require minimum operating personnel and maintenance. More important, versatile G-E equipment is easily incorporated into your existing system. And flexible G-E system design simplifies the addition of new equipment later.

Working with you and your consultants, G-E engineers provide many kinds of experienced help. Equipment selection and delivery can be co-ordinated by G.E. on a system basis, saving you valuable engineering man-hours and eliminating time-consuming paper work. You get production rolling sooner, too, because experienced G-E field engineers help speed installation to meet or better start-up dates. (If necessary, G.E. can even develop new electrical solutions to your special problems, utilizing extensive research and developmental facilities.)

Put these G-E systems and services to work early in your modernization or expansion planning. For more information, contact your local G-E Apparatus Sales representative or write for bulletin GEA-5984 to General Electric, Section 658-15 Schenectady, N. Y.

Engineered Electrical Systems for the Rock Products Industry

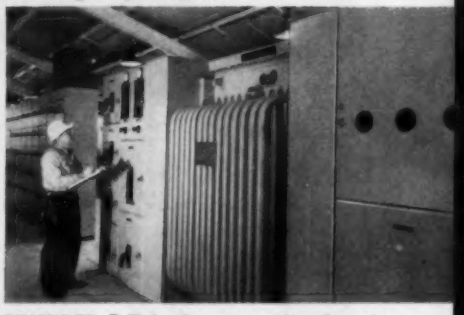
GENERAL ELECTRIC



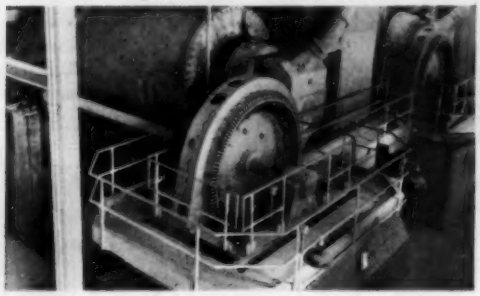
FLEXIBILITY and adequate power supply are achieved with G.E.'s easy-to-expand outdoor substations.

SKILLED APPLICATION ENGINEERS help plan and integrate your system.

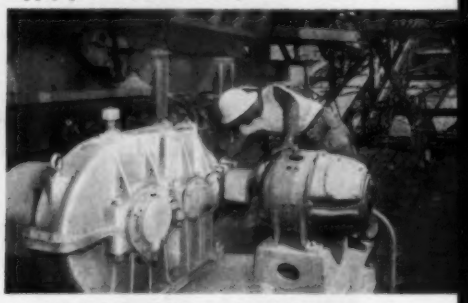
CENTRALIZED CONTROL is provided by low-voltage G-E Cabinetrol*, factory-w.red and easy to install.



COMPACT G-E load center unit substations supply power close to load, minimize losses.

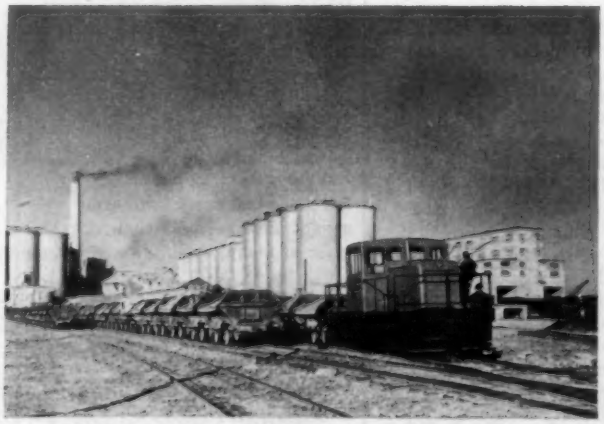


TOUGH AND STURDY G-E high-voltage synchronous motors for grinding have torque tailored to match load requirements with power supply system.

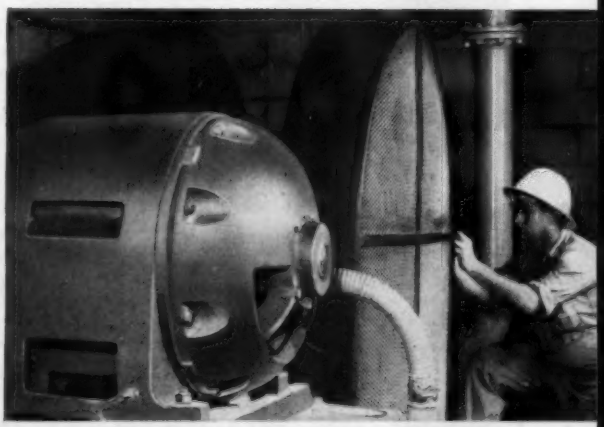


INSTALLATION COST IS REDUCED by packaged G-E Speed Variators, custom-engineered for adjustable-speed applications.

industry prepares to meet growing demands



ECONOMICAL, FAST HAULAGE of heavy loads is possible with powerful G-E diesel-electric locomotives. They require little maintenance, move more tons per hour at lower cost per ton.



DEPENDABILITY is a recognized advantage of G-E Tri-Clad* motors. This induction motor, driving an air compressor for agitation in slurry basins, requires minimum maintenance.

*Reg. trade mark General Electric Co.

COMPACT

2-WAY RADIO

gets the maximum use out of your heavy equipment!

For directing operations and for getting instant action in case of break-down, 2-way radio is a vital cost-saver.

The new Industrial Radio PAK-FONE Model J is small (only 10" x 9" x 5"), completely self-contained and may be used in heavy equipment, vehicles or as a base station. It operates on 6, 12, 24 volts D.C. and 117 volts A.C. with only 1½ ampere drain at 12 volts (on standby). Minimum installation is required as no extra dynamotors, power supplies, controls or loudspeakers are required. Unit may be removed for transfer or maintenance in less than 1 minute.

Portable PAK-FONES

When no power is available, such as on bridges or towers, or in areas where vehicles cannot operate, you can still have 2-way radio with portable self-powered PAK-FONES. Loudspeaker permits unattended reception. Several types and sizes to suit each requirement.

ir INDUSTRIAL RADIO CORP.
428 N. Parkside Ave., Chicago 44, Ill.

Gentlemen:
We are interested in 2-way radio for the following applications:

☐ For heavy equipment. ☐ For base station.
☐ For Superintendent's and maintenance vehicles. ☐ For portable operation.

Name_____
Title_____
Company_____
Address_____
City & State_____

Death of G. T. Cameron, Industrialist-Publisher, Ends Colorful Career

George T. Cameron, president of The Santa Cruz Portland Cement Company, who rose from a news-carrier's small-scale business to be one of the leading industrialists and publishers on the West Coast, died on October 3 while he was on his way to his office. Still active at 82 as the editor-publisher of the San Francisco *Chronicle*, he suffered a fatal heart seizure in his car and died an hour later.

Mr. Cameron's ingenuity proved invaluable in the rebuilding of Pearl Harbor after the Japanese attack in 1941. A ship operated jointly by him and Henry J. Kaiser had bulk cement pumped into its hold. Manpower, money, and time were saved by speedily delivering tons of the valuable material to Pearl Harbor, where it was pumped out for rapid reconstruction work.

In 1900, while he was chief teller for the Crocker-Woolworth National Bank in San Francisco, he was assigned by William H. Crocker to take over the operation of the Santa Cruz Cement Company's plant which was losing money for its owners. Under his supervision the business became a profitable company. He was named president of Santa Cruz in 1908 and remained with the firm for the remainder of his life.

In later years he became the publisher of the *Chronicle*, as specified in the will of his father-in-law, M. H. De Young, founder of the paper.

Ash Grove Reveals Expansion At Louisville, Nebr., Operation

The Ash Grove Lime and Portland Cement Company, Louisville, Nebr., has announced that increased demand for its products has caused the firm to undertake an expansion program which will triple the plant's production.

Additions to the operation will include a "good sized" kiln. Preparatory work has already begun, and completion of the addition is expected late in 1956 or early in 1957.

Production started recently at the new sand pit of The Builders Sand Company, Kansas City, Kans., near Bonner Springs, Kans.

A recent flood caused heavy damages in property, equipment, and supplies at the Martins Creek, Pa., plant of the Alpha Portland Cement Company. Water was reported to be 6 ft. deep in the packing house, and at one time railroad cars on a spur near the plant were under water.

Iraq Plans Two Cement Plants To Supply Material for Dams

Bids were taken in August for the construction of two cement plants in Iraq to provide low-cost cement for the Bekhme and Dokan Dams It is planned to utilize domestic raw materials and save on transportation. Scheduled for completion in 1956, the plants will cost about ID 6,000,-000. (1 ID equals $2.80.)

One of the plants is to be located at Mosul and the other at Sarchinar, near the Dokan Dam. Both plants will use the wet process and are to produce 350 metric tons of low heat cement per day. Each will have two 5,000 kilowatt power plants and will supply 3,000 kilowatts to nearby cities.

According to the National Lime Association, lime shipments in the United States during April, 1955, reported previously at 811,000 tons, actually amounted to only 777,000 tons. The corrected figure, supplied by the U.S. Bureau of Mines, was the highest total up to that time. However, May shipments rose to 800,500 tons; in June the total declined slightly, to 787,000 tons.

..because they went to their doctors in time

Many thousands of Americans are being cured of cancer every year. More and more people are going to their doctors *in time.*

But the tragic fact, our doctors tell us, is that every third cancer death is a needless death... *twice* as many could be saved.

For the facts of *life* about cancer, call the American Cancer Society office nearest you or write to "Cancer" in care of your local Post Office.

American Cancer Society

Michigan Chemical Corp. Sells Manistee Brine Wells To Standard Lime & Cement

Michigan Chemical Corporation and Standard Lime and Cement Company have just announced the completion of a mutually-advantageous transaction whereby Michigan Chemical has sold to Standard Lime the brine wells at its northern chemical plant at Manistee, Mich.

Already using a part of this brine as its source of magnesium chloride for its magnesia refractory plant near by, Standard Lime will supply this brine and that of additional Standard Lime wells to Michigan Chemical for use in the latter's bromine plant.

Standard Lime and Cement Company, whose main office is in Baltimore, is a subsidiary of American Marietta Company of Chicago.

Michigan Chemical Corporation has its main office in Saint Louis, Michigan, where it produces industrial, pharmaceutical, and agricultural chemicals.

Chester N. Reitze, President Of Superior Portland, Retires

Chester N. Reitze, president of Superior Portland Cement, Inc., Seattle, Wash., recently announced his

Chester N. Reitze

resignation, which became effective October 10.

Mr. Reitze, who has served with Superior Portland and its predecessor companies for 35 years, has been president since 1948. He was vice-president and general manager for 24 years. He will continue to serve the company as a consultant and a member of the board.

"The most important thing I know about cranes is . . .

THIS ONE DOESN'T WEAR ME DOWN!"

Air-operated controls—and a crane that is always ready to go to work. Torque-Controls for smooth, accurate handling . . . and almost no clutch wear or adjustment. Short wheel base and only *six tires* so that it can turn and travel in any aisle big enough *for a truck.*

All ORTON cranes now have *Torque-Control*

- Locomotive Cranes — Catalog No. 84
- Aero (Rubber Tired) Cranes — Catalog No. 85
- Powermatic (Crawler) Cranes — Catalog No. 87

ORTON

CRANE & SHOVEL COMPANY
608 S. Dearborn St. • Chicago 5, Ill.

All four plants of the McLELLAN STONE CO. are TELSMITH Equipped

● The McLellan Stone Co. operates four Telsmith-equipped crushing plants in the south central part of Kentucky. These plants produce crushed stone which meets Kentucky state highway specifications, as well as aggregate for local construction purposes. The company has been in active operation for over forty years under the guidance of the late James C. McLellan. The four plants are now operated by his sons George, David, Robert and William McLellan. These plants include four Telsmith Heavy-Duty Apron Feeders, four Telsmith Primary Crushers, six Telsmith Secondary Crushers, and twelve Telsmith Vibrating Screens. The McLellans are well satisfied with Telsmith Equipment.

Send for Bulletin 266.

TELSMITH equipment in these McLellan plants

- 36″ x 14′ Heavy-Duty Apron Feeder
- 36″ x 12′ Heavy-Duty Apron Feeder
- Two—36″ x 10′ Heavy-Duty Apron Feeders
- Two—18″ x 32″ Jaw Crushers
- 20-B Gyratory Crusher
- 16-B Gyratory Crusher
- 10-B Gyratory Crusher
- 48-S Gyrasphere Crusher
- Three—36-S Gyrasphere Crushers
- 36-FC Gyrasphere Crusher
- 4′ x 10′ Heavy-Duty Scalper
- Eleven—4′ x 12′ Vibro-King Screens

SMITH ENGINEERING WORKS

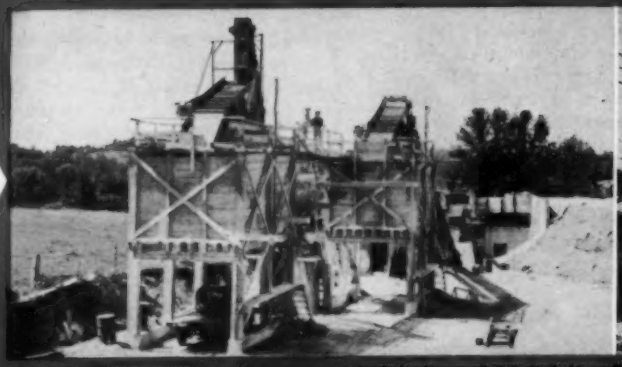
504 E. CAPITOL DRIVE **MILWAUKEE 1, WISCONSIN**

Representatives in Principal Cities in All Parts of the World • Cable Address: Sengworks, Milwaukee

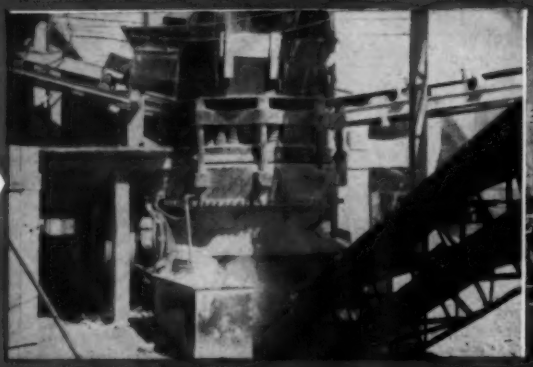
QS-29

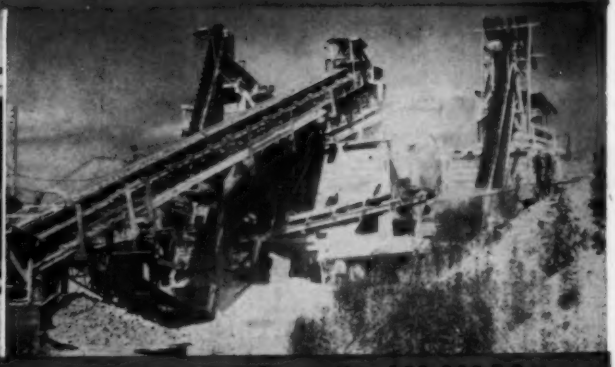
McLellan plant, Scottsville, Ky., 100 T.P.H.—Telsmith Apron Feeder and Jaw Crusher

Telsmith Apron Feeder and Gyratory Breaker—Horse Cave, Ky. plant of McLellan Co., 150 T.P.H.



Brownsville, Ky. plant of McLellan, 100 T.P.H.—Telsmith Scalper and Gyratory Breaker





Telsmith 48-S Gyrasphere Crusher—McLellan main plant, Bowling Green, Ky., 150-200 T.P.H.

Permanente Cement Co. Announces 4 Promotions To Vice-Presidential Posts

Appointments of four new vice-presidents for Permanente Cement Company were announced by Wallace A. Marsh, vice-president and general manager.

James K. Beatty, formerly general sales manager, was made vice-president in charge of sales, cement division; Paul E. Rogers, formerly controller, is vice-president and controller; John M. Garoutte, formerly works manager at the Permanente, Calif., plant, was advanced to vice-president in charge of operations, cement division; Peter S. Hass, formerly assistant to the vice-president and general manager, was appointed vice-president and assistant general manager, cement division.

James K. Beatty joined the Kaiser organization in 1938 as junior engineer for Consolidated Builders, during the construction of Grand Coulee Dam. He transferred to the Permanente Cement Company as a salesman in 1940, and was made general sales manager in 1946.

Paul E. Rogers began his association with the Henry J. Kaiser Company in January, 1931, as an accountant. In 1944 he was transferred to Permanente Cement Company as administrative manager and was made controller in 1947.

John M. Garoutte began working for the Permanente Cement Company in 1940 as an engineer. He was transferred to Kaiser Aluminum & Chemical Corporation in 1941, where he became successively, works manager of the Moss Landing, Calif., and Baton Rouge, La., plants. He returned to Permanente in 1948 as works manager of the plant at Permanente.

Peter H. Hass has been with Permanente since 1947. Beginning as an engineer, he became assistant works manager six years later, then was transferred to the company's Oakland headquarters as assistant to the vice-president and general manager.

IT COSTS NO MORE

TO USE THE BEST

REPLACE WITH

"Indian Brand"

MANGANESE STEEL
Shovel Dippers
Dipper Teeth
Shovel Treads

Crusher Jaw Plates
Mantles—Concaves
Bowl Liners
Roll Shells

Pulverizer Hammers
Grate Bars—Breaker Plates

Ball Mill Liners
Screen Plates

The Frog, Switch & Mfg. Co. CARLISLE, PA.
ESTABLISHED 1881

W. J. Parton Named to Staff Of General Crushed Stone

The General Crushed Stone Company of Easton, Pa., announces the appointment of W. J. Parton as assistant to the president, effective October 17, 1955.

Mr. Parton became affiliated with the Lehigh Navigation Coal Company in 1939 as a mining engineer and served that company in various capacities, which included assignments as superintendent, general manager, and vice-president. He became president in 1954 and was more recently president and board chairman of the Panther Valley Coal Company at Lansford, Pa.

Fred D. Witmer of Ohio Lime Suffers Fatal Heart Seizure

Fred Witmer, 70, former president and one of the founders of the Ohio Lime Company, Woodville, Ohio, died on September 18 at his summer home at Catawba Island, Ohio. He had been ill for several months with a heart ailment, and had retired in July as president of his company.

Mr. Witmer had spent 50 years in the lime industry, having started this work with the Warner Company at Cedar Hollow, Pa. In 1915 he founded the Ohio Lime Company and served as its secretary until 1926, when he became president. Due to ill health, he resigned from this post last summer, as well as from the presidency of the Woodville State Bank. He had also served as treasurer of the Refractory Dolomite Association, treasurer of the Finishing Lime Association, and as a director of the National Lime Association.

Portland Cement Assn. Offers Check Samples For Analytical Testing

The Portland Cement Association has prepared a set of three check samples of varied and carefully determined alkali (Na_2O and K_2O) content. These will serve as a reference in analytical work at member-company plants and other organizations interested in research in cement and concrete, such as colleges and universities, commercial testing laboratories, and federal and state agencies. The need for these samples was brought to the Association's attention by the A.S.T.M. Working Committee on Methods of Chemical Analysis.

These samples were analyzed both flame-photometrically and gravimetrically. Average values are as follows:

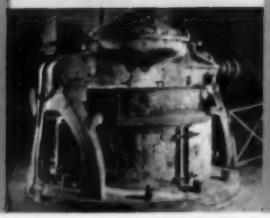
Check Sample No.	Alkali Content			
	Flame-Photometric		Gravimetric	
	Na_2O	K_2O	Na_2O	K_2O
2	0.06	0.25	0.07	0.24
3	0.26	0.70	0.26	0.67
4	0.60	0.14	0.58	0.14

The samples are priced at $2 each. Each sample consists of two 6-gram portions sealed in glass vials. Orders should be addressed to J. H. Walker, General Manager of Laboratories, Portland Cement Association, 33 W. Grand Avenue, Chicago 10, Ill.

Production recently began at the Muskegon Gravel Company, Muskegon, Mich., which is headed by Amos Cottrell. It is a two-man plant which turns out torpedo sand, various grades and sizes of stone and gravel.

F. D. Witmer

worth their weight in dollars saved



One of the 3 Bradley Mills in this plant.

TSP shafts and bushings

Roller assembly showing TSP Shaft installed.

Shaft that went into operation in September 1954 shows practically no wear to date.

A large cement plant in Western Pennsylvania had been forced to change bushings about every 10 days and shafts about every 30 days on their Bradley Mills. Rapid wear was costing them plenty in replacement parts, not to mention labor and downtime.

When Tool Steel Process shafts and bushings were installed and tested on one Bradley Mill, the results were tremendous. Shaft life was increased to over 500 days (13.6 to 1) while bushing life was upped to over 400 days (40 to 1). Savings of more than $3,500.00 annually have been realized. All three Bradley Mills in this plant have since been equipped with TSP shafts and bushings.

Amazing? Not particularly when you consider the outstanding durability of Tool Steel Process Parts. All TSP products are hardened by our special process. The file hard surface to full depth of permissable wear gives maximum life. The core, refined for toughness and ductility, gives maximum strength to TSP products. TSP products can save you thousands of dollars every year in maintenance and downtime. Write for Bulletin No. 452.

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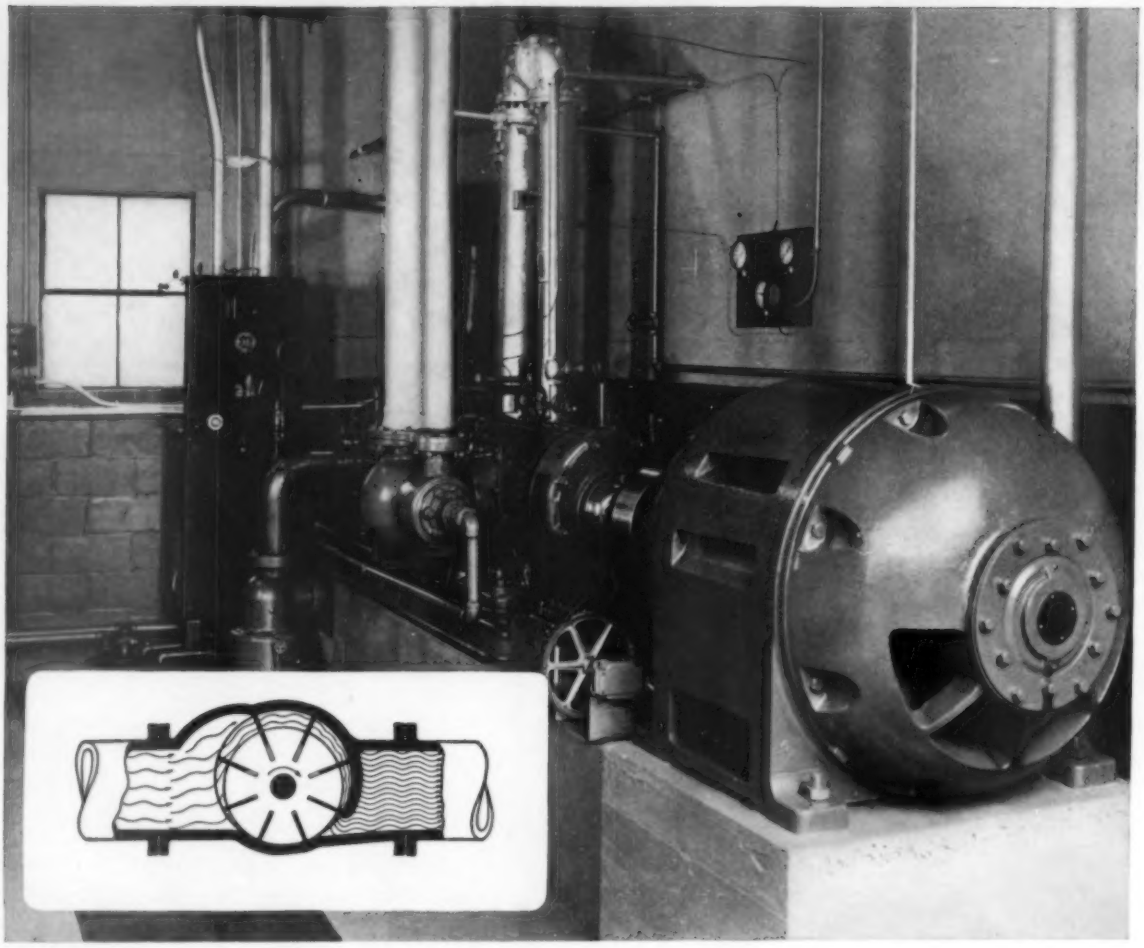

TWICE THE CAPACITY

of a Comparable Duplex Horizontal-belted Reciprocating Compressor

The Fuller Rotary serves best when you require additional compressed air, and available space for a compressor is limited.

It has twice the capacity of a comparable duplex horizontal-belted reciprocating unit, is singularly lacking in vibration, and requires only a nominal foundation to support its weight.

Operating at normal speeds, the Fuller Rotary Compressor is direct-connected and needs no cumbersome reduction gearing or belts. You can put a Fuller Rotary in almost any unused corner, or on a balcony, or (in reasonable size) even suspend it from the rafters.

Normal industrial pressure to 125 psig; capacities to 3300 cfm. Detailed information on design characteristics and typical space-saving applications will be forwarded on request.

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FULLER COMPANY, Catasauqua, Pa.

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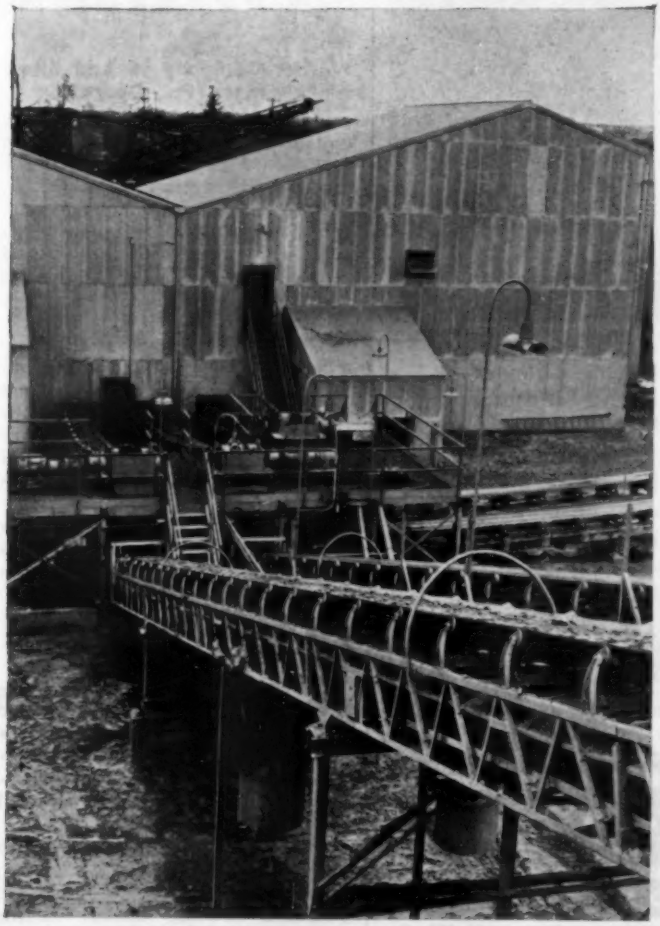
LOWER COST PER TON-MILE

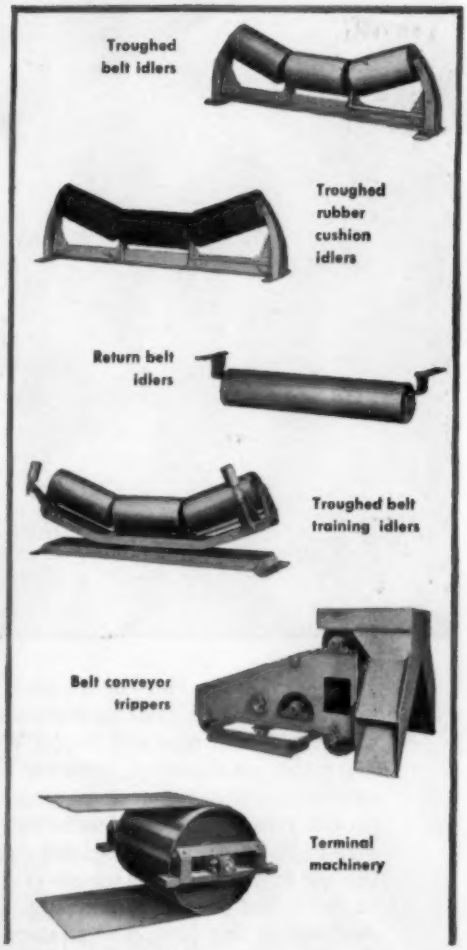
. . . yours with either a Link-Belt single belt conveyor or complete system

WHETHER you need a single belt conveyor or complete system, you'll find that Link-Belt engineering and equipment add up to lower cost per ton mile. Drawing from vast experience, our engineers can develop a system incorporating the most practical components from our complete line of quality idlers, trippers, drives, terminal machinery and other items. And if desired, we will handle erection.

Link-Belt has pioneered the development of belt conveyors for short or long hauls . . . indoor or outdoor service. To learn how this background can produce utmost economy per ton-mile in handling your bulk material, call your Link-Belt office.



Link-Belt 30-in. wide belt conveyors handling iron ore concentrate and tailings from washing plant to railroad and truck loading hoppers.



Link-Belt offers you one source for all equipment—including 500 idler sizes in 35 types . . . plus pulleys, drives, trippers and supports. Whatever the weight of loads, atmospheric factors or other operating conditions, you're assured of the easiest and most practical integration of belt conveyors into your overall system requirements.

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LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 13,952

HOW TO CONTROL AIR UNDERGROUND

There's no better "air-conditioning" system for underground operations than lines made up of Naylor Spiralweld ventilating pipe and Naylor Wedge-lock couplings. With this combination, lines can be installed quickly, and easily extended as work progresses. The coupling provides remarkable accessibility. Space on only one side of the pipe is required for connection, permitting the line to hug the walls wherever space is limited. With each joint of pipe the same length, any section can be replaced at any time. For push-pull ventilation, you'll do better with Naylor pipe and Wedge-Lock couplings. Write for Bulletins No. 507 and No. 514.

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Eastern U. S. and Foreign Sales Office: 350 Madison Avenue, New York 17, New York

Ideal's Expansion at Okay To Double Plant Output To 2,600,000 Bbl. Annually

Substantial progress on Ideal Cement Company's $6,000,000 expansion program at Okay, Ark., has been reported by Cris Dobbins, president of the firm. He stated that orders have been placed for a 12- by 450-ft. kiln and two 11- by 32-ft. grinding mills. Each of the latter will require a 2,000-hp. motor. It was added that all auxiliary equipment had been ordered.

Production at Okay will be approximately doubled upon the completion of the expansion, as the present output of 1,300,000 bbl. will be increased to 2,600,000 bbl. per year.

In addition to the burning and grinding facilities, Ideal is installing additional storage capacity for 152,000 bbl., which will double the Okay plant's present storage area.

According to Mr. Dobbins, construction is scheduled to begin next February and the new equipment is expected to be ready to go into production by August.

Warner Company to Add Kiln At Bellefonte, Pa., Operation

Directors of the Warner Company, Philadelphia, Pa., have ordered the construction of a rotary kiln at the firm's Bellefonte operation. E. L. Shoemaker, director of engineering, and Edgar R. Mallory, plant engineer, will supervise the design and installation of the new kiln, which is scheduled to be ready for production early next year.

The 10-ft. diameter kiln will have a daily capacity of 300 tons, and will be equipped with modern coolers and an internal pre-heater designed by Warner engineers. One important feature of the new installation will be a wet-type dust collector of the latest design.

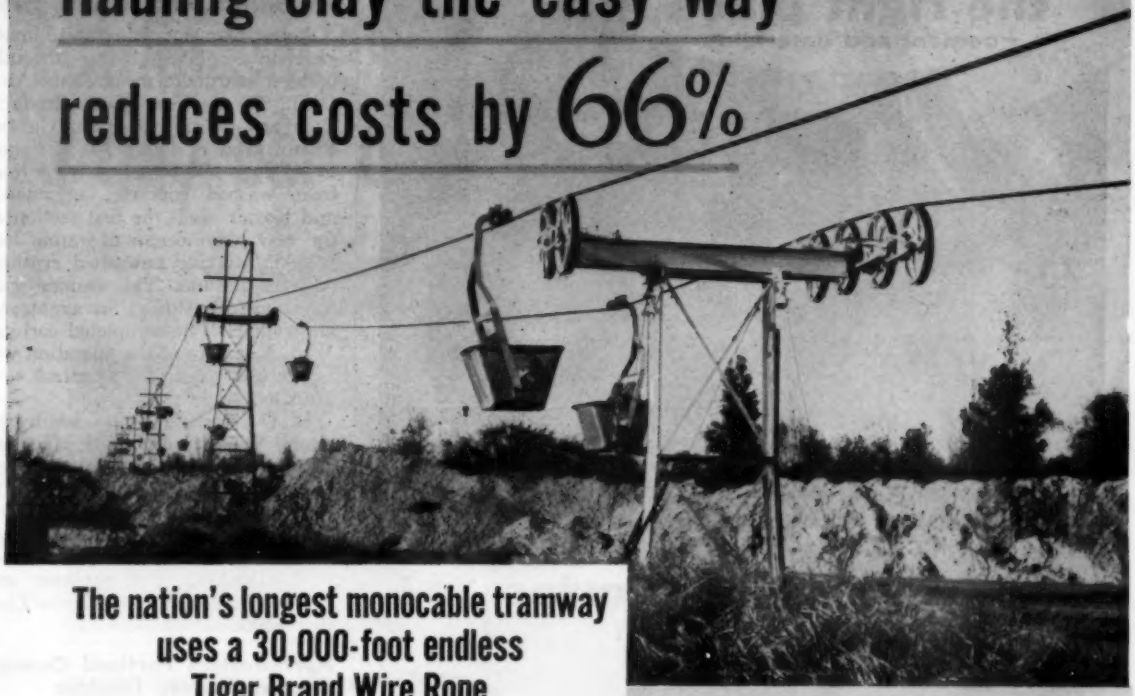
In addition to the kiln, Warner officials authorized the erection of a 2,500-ton kiln stone storage bin to enlarge existing storage facilities.

Natl. Gypsum Wins "Oscar" For Excellent Annual Report

National Gypsum Company's annual report for 1954 was judged the best in the building materials industry classification in the fifteenth annual survey of annual reports conducted by *Financial World*, national weekly magazine.

A bronze "Oscar of Industry" was presented to Douglas B. Littlewood, secretary of National Gypsum, at *Financial World's* annual awards banquet, held in the grand ballroom of the Hotel Statler in New York.

Hauling clay the easy way reduces costs by 66%



The nation's longest monocable tramway uses a 30,000-foot endless Tiger Brand Wire Rope

The owners of the Burns Brick Company of Macon, Georgia, were searching for a way to cut their clay mining costs. They had already tried trucks and a narrow-gauge railway on the 3½-mile haul, but costs were still too high and swamp water frequently stopped operations.

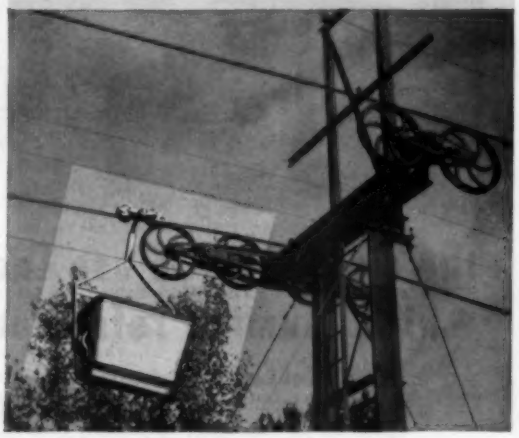
Finally they hit upon the idea of an overhead cable conveyor and with the help of two divisions of United States Steel, the tramway was built in 1950. American Steel & Wire Division furnished 30,000 feet of 1⅜" diameter 6 x 21 fiber core Lang lay preformed wire rope spliced endless. Tennessee Coal & Iron Division furnished the steel for the towers and worked out the design of the cable.

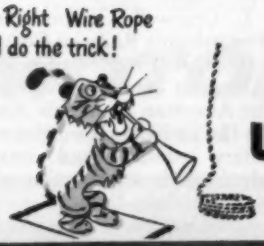
The tramway has now been in service five years and has hauled an estimated tonnage of more than a million tons. Costs have been reduced by 66% and production has not been stopped by high water.

If you have rope haulage problems, get in touch with any of our offices.

This Tiger Brand Wire Rope Tramway hauls 180 tons of clay per hour over difficult swampy land. Buckets travel 500 feet per minute.

Close-up of tower showing how buckets ride the 30,000-foot continuous rope.





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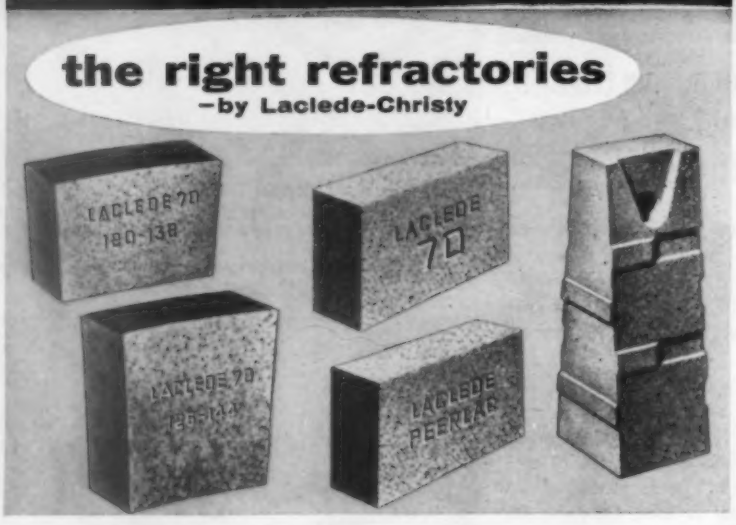
For economical, long-lasting, ring-resisting kiln liners, rely on Laclede-Christy 70% alumina refractories. They offer advantages of unusually low porosity, high strength, high density, resistance to fluxing action of clinkers, and possess high refractory value.



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Your use of Laclede-Christy refractories is your assurance of steady, economical production. You get "quality-first" product performance, verified by many, many service records. You get refractories to meet your exact requirements. You get quick, efficient service from nearby Laclede-Christy plants or distributors' warehouses. Call now.

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Star Rock Products Co. Building Automatic Plant At Santa Ana, Calif., Site

A new plant involving an ultimate expenditure of $300,000 is currently under construction near Santa Ana, Calif., for the Star Rock Products Company, an affiliate of San Gabriel Ready Mixt of Pasadena. Designed to produce 500 tons hourly of road base, washed concrete, aggregates, and plaster sand, the first section of the new plant began operating late in 1955, making unwashed crusher-run-base product. The washing-and-screening department for aggregates and sand will be completed early in 1956. A feature of the operation will be the use of automatic controls to a great extent.

E. O. Rodeffer, who heads the parent San Gabriel Ready Mixt and also operates Century Rock Products Co., an aggregates plant in El Monte, Calif., is supervising the new operation near Santa Ana. Design and construction are in the hands of F. McDonald, chief engineer and general superintendent of the Century plant.

Northwestern Portland Cement Receives Safety Trophies

Dedication services for the award of a permanent safety trophy were held at Northwestern Portland Cement Company's plant at Grotto, Wash.

The trophy was given in recognition of the company operating its cement plant and quarry without a single lost-time accident in 1954. It was presented by Ivan LeGore, safety director, Portland Cement Association, Chicago, and was accepted for the company and employees by Frank Baldwin, plant superintendent.

The State of Washington also recognized the event. L. H. Bates, Director of the Department of Labor and Industries, presented the State's Merit Plaque, which was acknowledged by Denzil Cutler, Chairman of the Company's Safety Committee.

J. L. Cranwell Named Head Of American Standards Assn.

J. L. Cranwell, vice-president of the Pennsylvania Railroad Company, New York, was elected president of the American Standards Association.

The American Standards Association is the national clearinghouse for voluntary industrial and consumer standards. It is a federation of 115 trade associations, technical societies, and public interest groups. There are 2,300 companies affiliated as members.

FORT WORTH SAND AND GRAVEL CO. V. P. CHARGE OF SALES, GEO. A. MEIHAUS, SAYS:

"Radio saves us $10.00 a day per truck"

Mixer driver Alvin E. Hobbs has just received instructions to proceed directly to his next job without going back to plant.

From his mobile repair van J. A. Markham talks directly to drivers, often diagnoses trouble so driver himself can make emergency repairs.

Chief radio dispatcher Coy Anderson gives instructions to a driver miles away.

READY MIX OPERATORS:

HERE IS CONSTANT CONTROL OF 51 TRUCKS OPERATING BETWEEN 5 PLANTS

Diverting trucks as needed to handle the output of five separate mixing plants was a king-size job. But Motorola 2-way radio has reduced it to everyday routine for the Fort Worth Sand and Gravel Co. of Texas.

Constant radio control—every minute of the day—of every one of the 51 mixers has resulted in a *saving* of about 20% in mileage per yard of delivered concrete. Drivers get their new orders *at the job site*, and usually go *directly* to the next job without needless travel. Radio actually gets an *extra hour* of bonus production daily from every truck.

Besides speeding delivery and giving better customer service, Motorola 2-way radio has cut costs many other ways. Overtime of drivers and batch plant personnel has been slashed at Fort Worth. Telephone "hunting" by drivers has ended . . . reports are sent and orders received right in the cab. One radio equipped service van does the work of two . . . speeding repair and cutting down-time.

Five supervisors, out most of the time in their radio equipped cars, have instant contact with the main office. Meihaus says his company wouldn't be without 2-way radio now.

Find out how Motorola 2-way radio can pay for itself quickly by cutting costs for *you*, and go on to earn extra profits month after month. A Motorola Engineer will show you how. Write, phone or wire—TODAY!

MOTOROLA

2-WAY READY MIX RADIO

MOTOROLA COMMUNICATIONS & ELECTRONICS, INC.
A SUBSIDIARY OF MOTOROLA, INC.
4501 AUGUSTA BOULEVARD • CHICAGO 51, ILLINOIS
ROGERS MAJESTIC ELECTRONICS LTD., TORONTO, CANADA

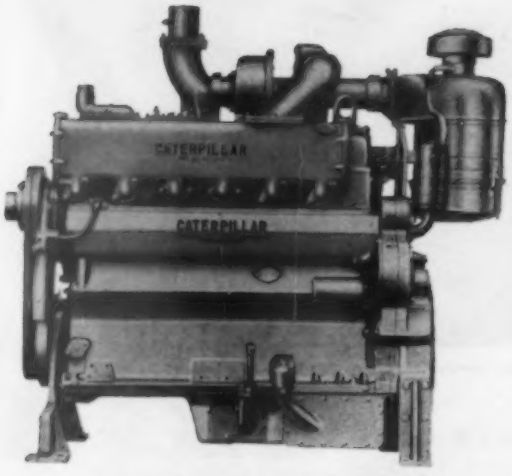
Motorola consistently supplies more mobile and portable radio than all others combined.
Proof of acceptance, experience and quality.
The only COMPLETE radio communications service—specialized engineering . . . product . . . customer service . . . parts . . . installation . . . maintenance . . . finance . . . lease.
"The best costs you less—specify Motorola."

Announcing 2 more new

The new

D337

Series F with Turbocharger



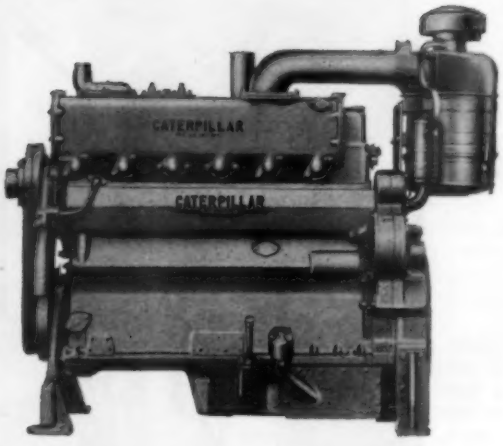
310 HP

maximum @ 2000 r.p.m.

The new

D326

Series F



200 HP

maximum @ 2000 r.p.m.

MODERN, COMPACT, HEAVY-DUTY UNITS FOR

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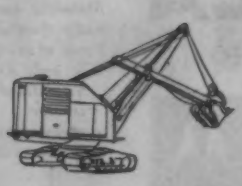

Mining Equipment
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Full time
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Available as original power in many types of equipment . . . direct drive or choice of transmissions, including hydraulic couplings and torque converters. Also available as Electric Sets and Marine Engines.

CAT* DIESEL ENGINES

CHOICE OF 3 STARTING SYSTEMS

AIR

For fast starts where a supply of compressed air is readily available, a sturdy vane-type air motor is offered. Also available: air compressors and storage equipment.

ELECTRIC

Where speed of starting and convenience are of greatest importance. Also available: automatic start-stop controls which require no operating personnel.

GASOLINE

For all-weather starting. This system preconditions the diesel and supplies full lubrication before the diesel is started. Also available: electric starters for the gasoline starting engine.

Here are the two newest diesels in Caterpillar's modern, heavy-duty line—more efficient, more compact and more powerful than the units they replace. In *any* application, they offer you more for your money than *any* engines in their power range!

Major advances in design and time-tested Caterpillar features combine to make this power pair more productive and economical to operate than ever. For example:

• New Turbocharger (in the D337 Series F) utilizes exhaust heat to drive supercharger. Delivers air in direct proportion to engine's need—less air at low load, more air at full load.

• New hydraulic valve lifters practically eliminate valve adjustment and provide quiet operation.

• New, improved water jets deliver fan-shaped flow, provide more effective cooling.

• Heavy-duty, oil-cooled pistons with chrome-faced rings, built for thousands of hours of work before inspection is necessary.

• Sealed cooling system reduces mineral deposits.

• Full-flow filtering of fuel and lubricating oil.

• A complete line of attachments to meet all your requirements.

All these and other features add up to a new standard of performance—better operation and more power with less maintenance and long life. For full details, see your Caterpillar Dealer. You can always count on him for reliable information and prompt service!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

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NEW D337 Series F and NEW D326 Series F— LATEST EXAMPLES OF CATERPILLAR LEADERSHIP IN ACTION

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I'd like more information on the new D337 Series F ☐, D326 Series F ☐.

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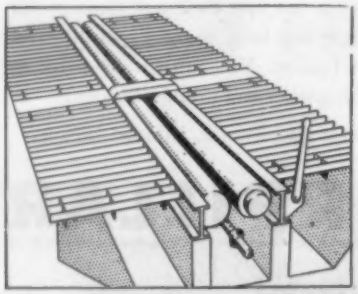
British Concern Develops Truck Wheel Washing Device

A new type of truck wheel washing device was recently installed at the yards of The Ham River Grit Company Limited, producers of concrete aggregates, Thorpe-Egham, Surrey, England.

Manufactured by William Moseley (Engineers) Ltd., of Feltham, Middlesex, the device is operated as follows: the vehicle to be cleaned is driven on to two free rollers spaced to allow maximum contact with the rear wheels. As the vehicle drives over a grid on to the rollers, one of them is locked by means of a hand-brake ratchet. When the rear wheels come into position on the rollers, the ratchet is released, and at the same time a water valve is operated which allows jets of water to spray up between the wheels.

A truck having its rear wheels washed on the new English device.

The top gear is then engaged, and the wheels are allowed to rotate. When this is done, all the mud, stones, etc., are thrown clear of the wheels, and the water completes the cleaning operation. As the vehicle moves off the device, the hand-brake lock ratchet is again put on the roller and the water is turned off.



A drawing showing the spraying pipe beneath the wheel rollers.

Water can be taken from the city system if available, or a pump and a tank can be fitted.

• Christmas Seals have been sold in the United States since 1907. The idea was originated in Denmark by a man who thought of selling them to aid needy sick children. The late Emily Bissell of Wilmington, Del., adopted the idea to raise money for an anti-tuberculosis project in this country. Local associations conduct the Christmas Seal sale, and 94 percent of the funds collected is spent for local work. The remaining 6 percent is sent to the National Tuberculosis Association. Buy and use these attractive seals this year.

July Lime Sales Decline—Major Uses Down from June

Domestic sales of open-market lime (744,009 short tons) decreased 5 percent from the previous month, according to reports of producers to the U. S. Bureau of Mines. A slight decrease was noted in all the major uses in July, as compared to June.

The accompanying table shows sales by types and major uses.

H. W. Rich, Vice-President Of Riverton Lime, Dies at 51

Herbert W. Rich, vice-president in charge of operations for the Riverton Lime and Stone Company, Inc., Riverton, Va., died in Front Royal, Va., on October 5 at the age of 51 years.

Mr. Rich, a graduate of Lehigh University, served for three years in Peru as a member of the American Smelting and Refining Company's staff. He was subsequently affiliated with the Worthington Corporation, the United States Gypsum Company, and the Penn-Dixie Cement Corporation.

In 1953 he joined Riverton Lime and Stone as a vice-president and was placed in charge of operations of the Dominion Minerals Division at Piney River, Va. On July 1 of this year he was made vice-president of operations for both divisions of the firm (including the Riverton Division) and moved to Front Royal.

Open Newly Remodeled Plant Of Fort Worth Sand & Gravel

Charles Marshall, executive vice-president of the Fort Worth Sand and Gravel Company, Fort Worth, Tex., has announced that the firm's newly remodeled sand and gravel plant located at Quigley, Tex., is now in operation.

The plant, recently remodeled at a cost of $175,000, has a capacity of approximately 200 tons of washed sand and gravel an hour. There is also a concrete plant at the site, which has a capacity of 600 yd. of ready-mix per day.

Lime Sold by Producers [1] in the United States, in Specified Periods of 1954-55, by Types and Major Uses, in Short Tons

	June	July		January-July [2]	
By types:	1955	1955	1954	1954	1955
Quicklime	607,405	581,142	458,690	3,173,451	4,055,687
Hydrated lime	179,231	162,867	158,089	1,090,506	1,128,566
Total lime [3]	786,636	744,009	616,779	4,263,957	5,184,253
By uses:					
Agricultural:					
Quicklime	3,691	3,328	2,361	42,198	43,240
Hydrated lime	13,529	9,635	9,268	127,486	107,961
Total	17,220	12,963	11,629	169,684	151,201
Building:					
Quicklime	24,891	21,966	17,089	111,048	143,952
Hydrated lime	97,409	92,733	91,564	552,013	581,357
Total	122,300	114,699	108,653	663,061	725,309
Chemical and other industrial:					
Quicklime	371,269	364,094	301,833	2,015,668	2,510,135
Hydrated lime	68,293	60,499	57,257	411,007	439,248
Total	439,562	424,593	359,090	2,426,675	2,949,383
Refractory (dead-burned dolomite)	207,554	191,754	137,407	1,004,537	1,358,360

[1] Also includes a small quantity of captive tonnage (6-7 percent of the total reported herein) to maintain comparability with the annual lime statistics. The monthly canvass excludes the output of plants producing less than 10,000 tons a year.

[2] Approximately 60 percent of lime produced is high-calcium and 40 percent high-magnesium.

[3] Includes January-June revised figure.

BONUS PRODUCTION

that's the reason for Commander popularity

Cedarapids

Built by IOWA

67% of owners report production exceeding expectations

50—1 of every 6 orders for Cedarapids equipment is for a COMMANDER

420 tons per hour producing 7/8" with 15 to 20% crushing . . . 400 tons per hour of 1¼" material with 12% crushing . . . 275 tons per hour of 1" material with 20% crushing! These are typical reports received from Cedarapids Commander owners all over the world. It is little wonder that it is the most popular aggregate producing plant with contractors and pit operators today.

Join the growing group of satisfied Commander owners. You will have a machine that was designed to meet the conditions of modern road building that call for higher percentage of crushing of pit material, finer aggregates and lower operating costs. See your Cedarapids distributor today for the complete story.

FEATURES THAT MEAN PROFITS FOR OWNERS

- ***New 30" x 25" Secondary Roll Crusher***
  This new roll crusher provides 12% more secondary crushing yet handles the same size feed. This new larger size balances the high screening capacity of the Commander's big screen.
- ***Large Horizontal Vibrating Screen***
  To handle the higher percentages of secondary crushing, the big 48" x 10' 2½-deck screen gives the Commander 30% more screening capacity than plants of comparable size. The Cedarapids Horizontal Vibrating screen provides most accurate grading and allows lower overall height.
- ***Efficient 10" x 36" Jaw Crusher***
  The high primary crushing output of this unit keeps the plant operating at peak capacity. Cedarapids Jaw Crushers are of a forced feed overhead eccentric shaft design engineered for extra-high capacity and low cost performance.
- ***Wide 30" Conveyors***
  Feed conveyor, delivery conveyors and undercrusher conveyor are extra wide to handle the greater capacity of the Commander. Channel conveyor frames combine light weight with exceptional strength.

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U.S.A.

ATHEY HiLOADER CUTS LOADING COSTS 50%

Easier, Faster Truck Spotting
• Fast Loading
• Speedy Maneuverability from Stockpile to Stockpile
• Minimum Downtime

Above are the reasons the Athey Model 125 HiLoader cuts loading costs 50% for Standard Materials Corporation, Indianapolis, Indiana. The Athey HiLoader is located at their gravel and stone quarry at Clinton, Indiana. The machine averages 200 tons per hour, but has hit 3500 tons in a 9 hour day. This adds up to a neat 50% savings in loading costs in comparison to the shovels, cranes and other makes of loaders previously used.

What about you? Do you have a need for a speedy, rugged stockpile loader in your business? Then have your Athey-Caterpillar dealer point out these features . . . and many more: wide moldboards reach out to pull in large windrows or dig into a stockpile. Heavy-duty clutch for maintained crowding action. Exclusive full-floating feeder that rises and falls with the contour of the windrow or load being handled. Fast-moving, rubber-covered conveyor belt. All action controlled hydraulically from the operator's seat. Big capacity, up to 10 cu. yds. per min. in free-flowing material; up to 25 cu. yds. per min. in snow. Swiveling discharge conveyor swings to any position either side or straight back, permitting fast spotting of trucks.

Put the Athey HiLoader to work on your next materials handling job! You'll be glad you did!

Athey APCOR Products

ATHEY PRODUCTS CORPORATION
5631 West 65th Street
Chicago 38, Illinois

J. E. NORTON, PRESIDENT
T. M. JORDAN, VICE-PRESIDENT
G. F. M. DOMINGO, SECRETARY
E. M. MANTARING, DIRECTOR
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JACKBILT CONCRETE BLOCK CO., INC.
MANUFACTURERS CONCRETE BLOCKS
167 J. RIZAL ST., MANDALUYONG RIZAL

c/o P. O. BOX 939
MANILA, PHILIPPINES
TEL. 6-10-94

February 2, 1955

THOMAS FOUNDRIES, INC.
P.O. Box 1111
Birmingham 1, Alabama

Gentlemen:

We are very proud of our new 8 inch Thomas DURABLE Dredge Pump, top discharge, which we installed sometime ago on our new dredge. It is doing a great job, and its efficiency has pleased us up-to-date.

We were delayed for sometime in starting the operation of this pump, not because of the pump but due to some finishing touches on our new dredge - in fact we have not had any difficulty on the installation or operation which up to this writing has been excellent.

Our original dredge is equipped with an old pump and after the favorable experiences we have had we now have intentions of changing this to another Thomas Pump during the next year.

Very sincerely yours,

JACKBILT CONCRETE BLOCK CO., INC.

EDUARDO GARCIA
Assistant Manager

EG/sjb

In the Philippines They Say:
"LOS RESULTADOS SON EXCELENTES!"

Stateside This Means: "IT DOES A GREAT JOB!"

Senor Garcia is another Sand and Gravel producer who has found Thomas DURABLE DREDGE Pump doing a great job. No wonder he is enthusiastic over his increased production and reduced operating costs.

NO MATTER HOW YOU SAY IT . . . no matter where they are used . . . the first Thomas Pump installed invariably leads to a second and third Thomas Pump installation to replace other makes which are less efficient, less durable and are more costly to operate.

Read Senor Garcia's letter above and the familiar statement he makes, "WE NOW HAVE INTENTIONS OF CHANGING ANOTHER OLD PUMP TO A THOMAS."

Modern abrasion-resisting alloy (Thomas Ni-Hard) plus modern Thomas Pump design produce the results responsible for this decision.

YOU CANNOT BUY, AT ANY PRICE, A MORE DURABLE PUMP FOR SAND AND GRAVEL . . . YOU CANNOT BUY ONE THAT WILL MAKE YOU AS MUCH MONEY.

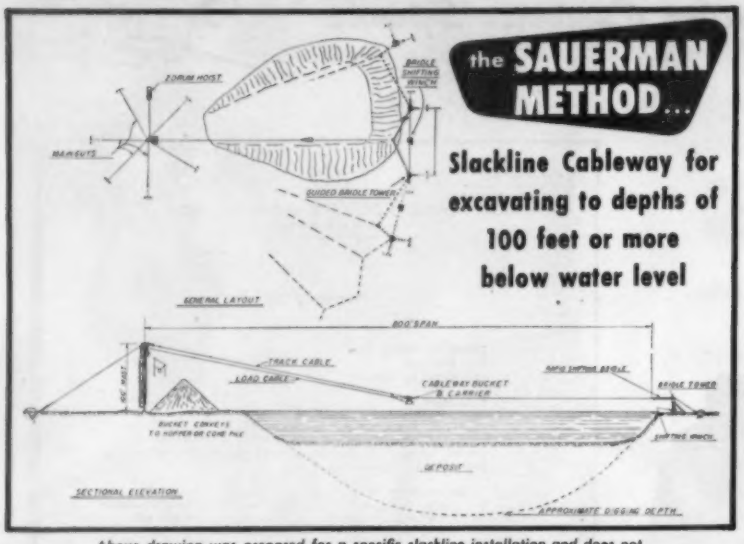
Thomas DURABLE DREDGE PUMP is made in a range of sizes from 6" to 16" discharge and arranged to discharge top or bottom, right or left.

Be skeptical . . . ask us for proof . . . get the facts for yourself.

Write or wire us today.

THOMAS FOUNDRIES, *Incorporated*
P.O. BOX 1111 . . . . BIRMINGHAM, ALABAMA

HOW TO GO UNDER WATER AND GET ALL THE MATERIAL FROM YOUR DEPOSIT



Above drawing was prepared for a specific slackline installation and does not represent maximum spans. Rapid shifting bridle is not needed for many deposits.

Cableway at Cabinet Gorge Dam digs and hauls from tailrace 1000 ft. away. **(Full details in Sauerman News No. 143.)**

New York gravel producer switched to cableway for underwater operation of his pit. Average haul is 600 ft. from a 50-ft. depth **(Sauerman News No. 141).**

Deposits below water yield new profits with a long reaching Sauerman Slackline Cableway. On job after job this machine has proved to be the most efficient for this type of operation. It is especially effective where the material to be excavated has good depth and will flow to the bottom of the cut. For shallow deposits or non-caving material a rapid shifting device is used to change the line of operation.

One man controlling the hoist digs, conveys and elevates from deposit to plant over spans of 1000 ft. or more . . . across streams, lakes, bogs or deep pits. The powerful load line pull insures digging penetration. Tensioning the track cable lifts the bucket which is inhauled at high speed and dumps automatically. Gravity return completes the fast operating cycle. Bucket capacities range from ⅓ to 3½ cu. yds.

To get fast, economical long range excavation, and the shortest, most direct way from pit to pile use a slackline cableway. Contact Sauerman for specific recommendations. No obligation. Request Catalog C, showing detailed specifications and photos of slackline cableways in action on all types of deep digging jobs.

SAUERMAN BROS. INC.

634 S. 28th AVE. | BELLWOOD, ILL.

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

Natl. Gypsum Expands Output At Baltimore by One-Third

National Gypsum Company has announced the enlargement of its gypsum products plant at Baltimore, Md., which for eight years has been producing gypsum board at a higher rate than any of the other 11 similar units operated by the firm.

More than 32,000 sq. ft. of floor space has been added, and productive capacity has been increased by about one-third at a cost of approximately $1,500,000.

The kilns, which were formerly 240 ft. long, were extended another 95 ft. Loading has been transformed into a mechanical process in a modern warehouse which has wells accommodating six trucks and two flat cars simultaneously for loading. Seven days' production can now be loaded in five days.

Mathews of Marblehead Lime Honored for Long Service

Milton Mathews, vice-president in charge of sales of the Marblehead Lime Company of Chicago, was honored recently at a luncheon to mark his 50 years of service.

Colonel Henry Crown, chairman of Material Service Corporation, Marblehead's parent company, presented Mr. Mathews with an engraved watch.

Mr. Mathews started with Marblehead as a clerk in the traffic department and advanced through the order department and sales department. He was appointed sales manager in 1922, secretary in 1938, and vice-president in charge of sales in 1947, the same year Marblehead became a subsidiary of Material Service Corporation.

Milton Mathews (second from left), vice-president in charge of sales of Marblehead Lime Company of Chicago, receives engraved watch from Colonel Henry Crown, at a luncheon honoring Mr. Mathews on his 50th anniversary with Marblehead. With them are Mrs. Mathews and Wallace Wing, president of Marblehead Lime.

30 Years ago in Pit and Quarry

THE November 1 and November 15, 1925, issues of PIT AND QUARRY were full of information for those interested in how things were done 30 years ago. They contained a wide variety of articles on technical and operating phases of the nonmetallic minerals industries and operating articles on outstanding plants in six major industries in all parts of the country. These issues may be said to represent the start of a new era for PIT AND QUARRY and for the PIT AND QUARRY HANDBOOK which, then as now, was sent free to producers of nonmetallic minerals.

The 1926 HANDBOOK, which at that time also was as now the only authoritative reference book for these industries, was a completely new book, with 32 chapters by the editorial staff and by 18 able contributors; 12 of the latter were associate editors. Among them were: E. D. Roberts, noted cement plant engineer and an associate editor of PIT AND QUARRY; George B. Massey, authority on dredging, and an associate editor of PIT AND QUARRY; R. N. Van Winkle, operator of two quarries and writer for PIT AND QUARRY on related subjects; C. H. Sonntag, cement plant operator and writer for PIT AND QUARRY. Others not on the staff but also contributors to PIT AND QUARRY, included: Virgil Maroni, chief engineer for the Gypsum Industries; Harvey S. Owen, chief engineer of the Western Lime & Cement Company; Charles Longenecker, combustion and power engineer; Joseph H. Donnell, traffic and transportation specialist; D. J. Hutchinson, consulting accountant; and Dwight Ingram, fire protection engineer. All of these men were the best available authorities on their various specialties as related to these industries.

The wide variety of plant operating articles included eight on sand and gravel. One told how the Big Tejunga Rock & Gravel Company took over a failing operation near Los Angeles and made it a success. Another described a successful small plant, that of Service Brothers at Waterford, Calif. The firm of Conlin & Johnson, near Toronto, Ont., operated an efficient 1,000-ton-per-day plant. The modern 2,000-ton-per-day plant of the Grant Rock & Gravel Company at Triant, Calif., featured the recovery of $100 worth of gold daily. The State Washed Sand & Gravel Company, near Milwaukee, Wis., operated adjoining sand and gravel and masons' sand plants. The Wyoming Sand & Stone Company at Wilkes-Barre, Pa., featured one of the first automatic belt conveyor stockpiling and tunnel conveyor reclaiming systems. J. P. Eyre Price was then vice-president of this company. Bonner Sand & Ballast, Ltd., South Durham, Quebec, specialized in the production of railroad ballast. The Atlas Rock Company's plant near Stockton, Calif., was doubled to 2,000-ton-per-day capacity to meet a contract for the construction of a new dam.

Two crushed stone operations were described. The Cummer Lumber Company at Kendrick, Fla., operated two plants for the production of Ocala limestone for road base. The Morris Stone Company at Holton, Ga., was billed as the southernmost crushed granite operation. It had a capacity of 2,500 tons daily.

One cement plant was featured, that of the Pacific Portland Cement Company at Redwood City, Calif. This was one of the few plants then using oyster shells as a new material and also one of the first to use electrical precipitators for dust recovery.

An article describing the operations of the Swanton Lime Works at Swanton, Vt., stressed the results obtained with a gas producer which had replaced wood firing of the kiln. The Fonda Lime Kilns, also described, burned wood and coal with forced draft. The underburned lime at this plant was dumped out of doors. After it had air slaked and crumbled, it was sold for agricultural purposes.

A feature of the November 1 issue was an article on the Eden Asbestos Company on Belvedere Mountain near Eden, Vt. This operation has since changed hands several times, and the present plant a few miles away is one of the most modern in existence.

Special articles in these issues covered standardization of explosives, views and experiences on explosives, retarders for portland cement, prime movers in stone quarries and gravel pits, and economy in producing sand and gravel.

Convention announcements included one for the annual meeting of the Concrete Products Association at Cleveland, Ohio, January 27 to 29, 1926. This meeting was open to all manufacturers of concrete block, estimated at about 10,000 at that time. Officers for 1925 were W. H. Carey, Wisconsin Rapids, Wis., president; S. I. Crew, Norwood, Ohio, and C. E. Lindsley, Irvington, N. J., vice-presidents; Bert Carey, Chicago, secretary; and Jacob Bosch, treasurer.

The coming convention of the National Crushed Stone Association at Montreal during the week of January 18, 1926, and that of the National Sand and Gravel Association at Atlanta, Ga., January 13 and 14, 1926, were also announced. In an editorial all details of both meetings and their sites were given.

In the news was the new plant of the Smith Engineering Works in Milwaukee.

Chemicals Industries Show Scheduled for Dec. 5-9

Sessions on technology, materials, and methods will arouse world-wide interest in the 25th Exposition of Chemical Industries, to be held at the Commercial Museum and Convention Hall, Philadelphia, Pa., during the week of December 5 to 9.

Among the multitude of displays there will be those showing the spectacular advances made in nonmetallic materials. Numerous exhibits will be devoted to the separation of materials by screening, filtration, and other means. Another project to be demonstrated will be a continuous moisture meter control, by means of which it is possible to obtain a continuous visual recording of the moisture of a product under working conditions.

A 1956 trade protocol was signed on September 23 between Russia and Iceland in which the Soviet Union agreed to supply Iceland with cement and other materials in exchange for salt herrings and filleted fish.

. . . from the ARCTIC to the EQUATOR

. . . from the FAR EAST to CONTINENTAL EUROPE

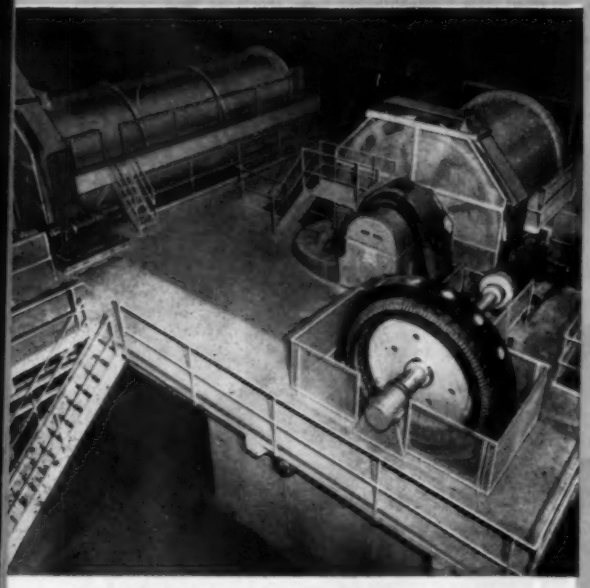
NORDBERG

are Industries' choice for the efficient

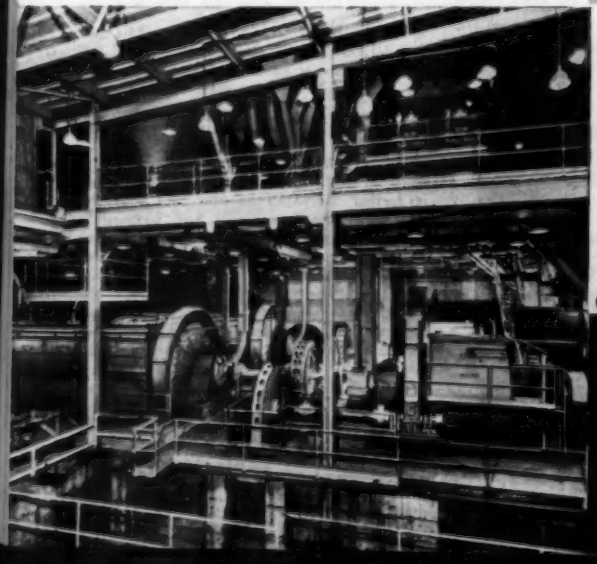
These six Nordberg 10'8" by 17' wet grinding Ball Mills efficiently serve a large Taconite reduction plant.

GRINDING MILLS

reduction of ORES, CEMENT and MINERALS



These two views show eight Nordberg Grinding Mills used for raw and finish grinding in the plants of a leading cement producer. Above is a 10'8" by 16' Ball Mill and a 9'6" by 32' Compartment Mill. Below are two 10'8" by 17' and two 9'6" by 11' Ball Mills, together with two 8'6" by 36' Compartment Mills.



MORE than half a century of progressive engineering achievement, combined with quality production in modern manufacturing facilities, have won for Nordberg a foremost position in the field of heavy machinery manufacture.

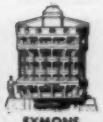
This is evidenced by the universal acceptance which Nordberg Machinery has received by most of the Mining and Mineral processing industries throughout the world.

Typical of this heavy machinery is the complete line of Nordberg Grinding Mills for raw and finish grinding of cement materials, the fine reduction of metallic and non-metallic minerals and for numerous other processes where friable material must be comminuted to fine sizes.

Nordberg manufactures Ball, Tube, Rod and Compartment Mills, of grate, overflow and peripheral discharge types for wet or dry grinding service, in sizes ranging from 6 feet to 13 feet in diameter, and up to 50 feet in length.

For large or small operations, you can depend on Nordberg Machinery to deliver maximum output at lowest possible cost. Write for further information. *NORDBERG MFG. CO., Milwaukee, Wis.*

SYMONS . . . *a registered Nordberg trademark known throughout the world*



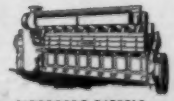
SYMONS GYRATORY CRUSHERS

SYMONS CONE CRUSHERS

SYMONS VIBRATING GRIZZLIES and SCREENS

SYMONS V-SCREENS

NORDBERG KILNS and COOLERS



NORDBERG DIESELS—10 to over 12,000 H.P.

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GM155

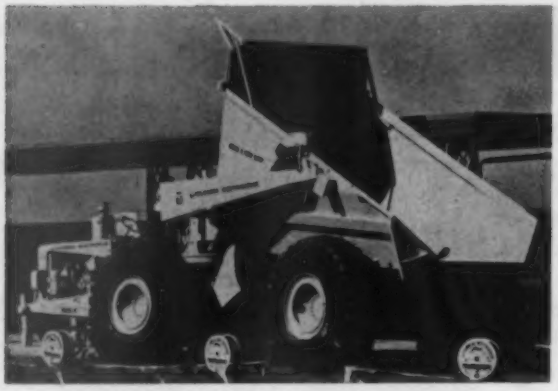
NORDBERG

MACHINERY FOR PROCESSING ORES and INDUSTRIAL MINERALS

NEW YORK • SAN FRANCISCO • DULUTH • WASHINGTON
TORONTO • MEXICO, D.F. • LONDON • JOHANNESBURG

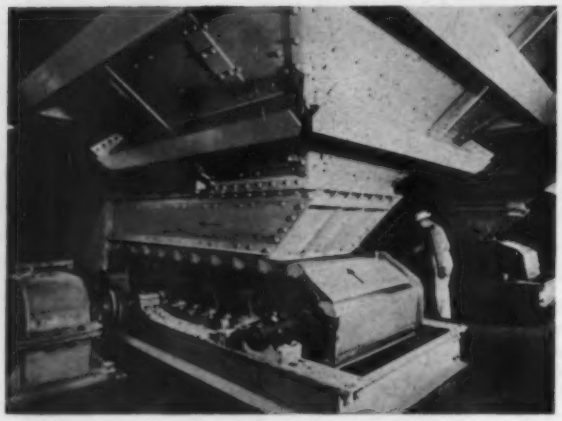
New Machinery and Equipment

(For more information, use card on p. 99)

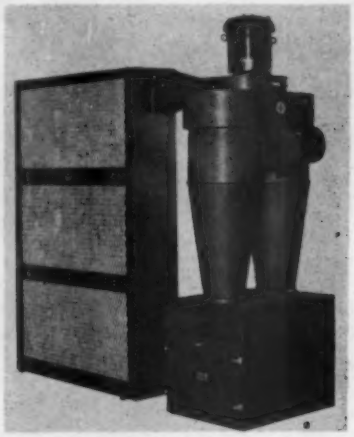


● The little boy perched on the side-arm of this LeTourneau-Westinghouse Model B rear dump is dwarfed by the size of the bowl of this 35-ton unit. The bowl of the big vehicle measures 14 ft. 4 in. long, 8 ft. 4 in. wide, and 8½ ft. deep. It was part of a half-million dollar equipment display held recently at Peoria, Illinois. ← (51)

● Stearns Magnetic, Inc., has announced a new H style 1200 series magnetic brake for use in the 50 to 100 hp. range. Diameter of the unit has been reduced 2 in., the length has been shortened, and up to 5¾ in. less clearance is required for housing removal on the new brake. ↑ (52)



● Manganese steel pan feeders made by Stephens-Adamson are made of the steel that hardens under impact. Amsco feeders are available in sizes to handle to 3000 or more tons per hour, and in lengths to 100 ft. Smooth, flat-top Amsco pans minimize danger from jamming lumps and side-leakage between pans and skirtboards. Roller tracks for chains reduces friction, wear, and maintenance. → (53)



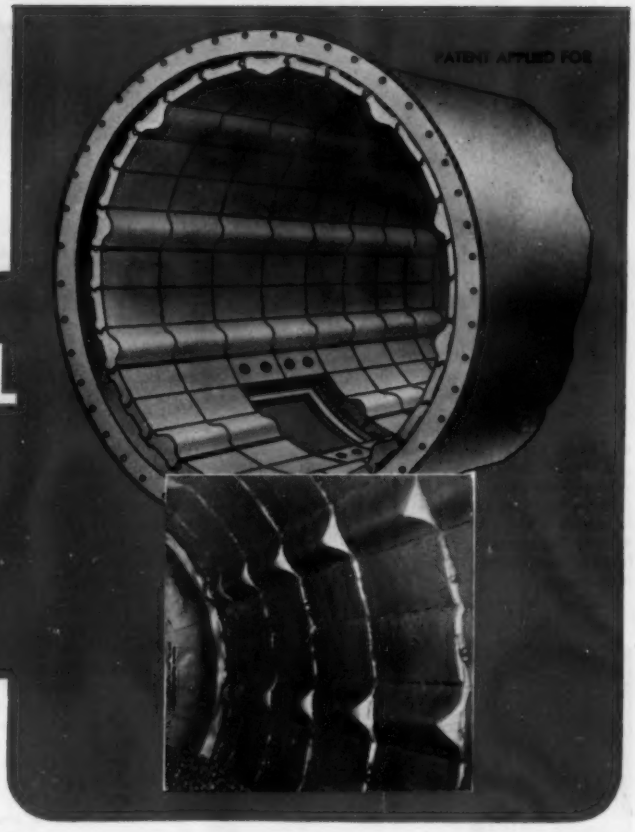
● Highly effective filtration through its six "throw-away" filters is achieved by the Torit model 219 FM-A cyclone-type dust collector made by Torit Mfg. Co. The unit recirculates filtered air back into the room, thus preventing heat loss during cold weather. Its 5 hp. motor pulls 2100 cu. ft. of air per minute through the 8 in. inlet at a static pressure of 3 in. (water). Efficiency ranges from 75% to 95%, depending on particle size. ↑ (54)

● M-R-S- Manufacturing Co. says their new M-R-S 200 Special and Wooldridge-M-R-S OS-300B scraper constitute the world's largest rubber-tired scraper unit. Power for the 43,000 lb. prime mover is provided by a 500-hp. V-12 diesel engine. Designed to support 60-ton payloads at speeds up to 35 m.p.h., the scraper uses broadbase 33.5 x 33 front and 37.5 x 33 rear tires. Flotation is further increased by the fact that the weight of the heavy unit and payload is distributed over 4 axles instead of 2 or 3, thus reducing to a minimum the ground bearing pressure per square inch of tire surface. Other important features of the new tractor-scraper combination include a high degree of maneuverability with practical non-stop 180 deg. turns, simple construction for low-cost maintenance and minimum downtime, and an extra-high degree of operator comfort for sustained efficient and economical operation. ← (55)

New

B&W UNIVERSAL LINER PLATES

Raise Performance, Lower Costs



The new B&W Tube Mill Liners have advantages that mean reduced costs in capital, time and labor.

Cost per ton of material ground is reduced, for the practical reasons listed below. Check them—you may find that one, or a combination, of these qualities will solve your existing problems.

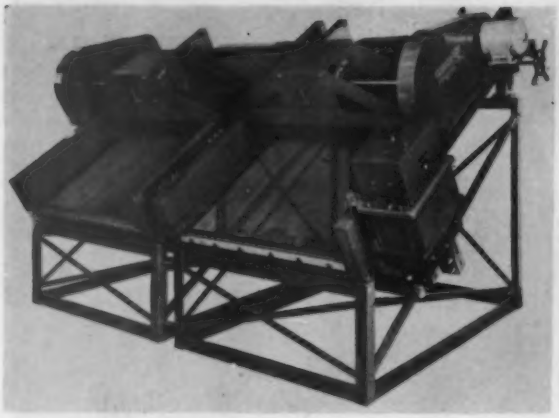
- Lower Initial Costs—No pattern and chiller costs —the result of standardization.
- Longer life of liners—Uniform wear will result from better quality control on a mass production casting, utilizing permanent molds. Size is ideal for uniform chill and heat-treatment.
- Longer life for different applications can be realized by a selection of proper materials. This design lends itself to either chilled irons or wear steels.
- Direct labor cost and the "down-time" to install the liners are reduced. Castings are easily handled due to small size and weight. Less fatigue of workers. No cranes needed to handle lightweight liner castings.
- Cost reduced for storage space. Minimum storage space required as small castings "stack" easily. Records simplified with one design of casting interchangeable for all size mills.
- Saves money on liner inventory. One design fits all sizes of mills, permitting standardization. Quicker unloading and storage possible.
- Savings in breakage claims and delays for replacements. Hard brittle irons are frequently broken in shipment when large castings are used. Small castings are rugged and almost impossible to break by handling.
- Savings in determining most efficient wear pattern. Same castings will produce wear profiles consisting of all lifter ribs, all flats or combination of both, including straight or spiralled lifter ribs. Straight or staggered circumferential joints can be used.

Liners are supplied in two nominal thicknesses, 1½" and 3" with 1½" high lifters. Castings are 6" wide x 12" long. Positive seating of small castings on mill shell means less breakage of castings under operating conditions. For additional information on B&W Universal Tube Mill Liner Plates, write The Babcock & Wilcox Company, Process Equipment Dept., Barberton, Ohio.

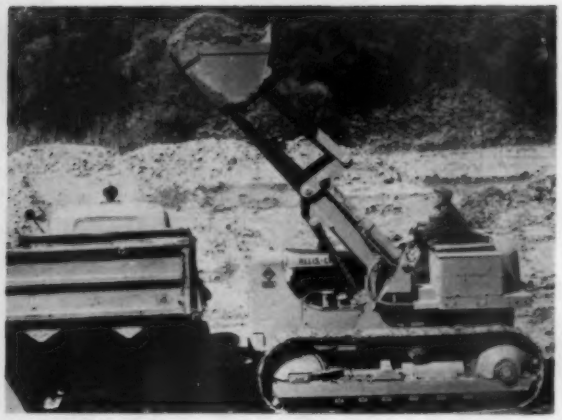
BABCOCK & WILCOX

BOILER DIVISION

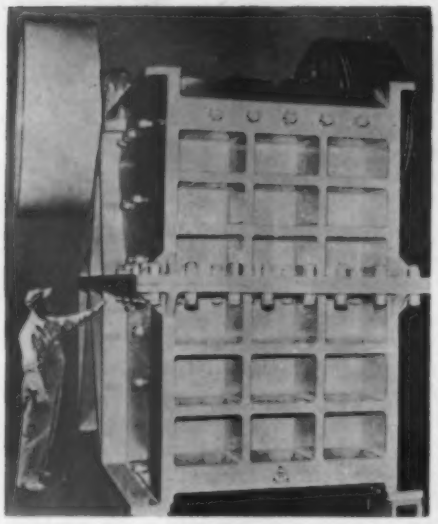
844-S



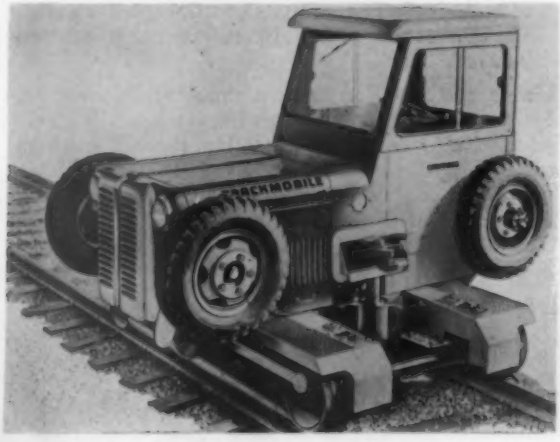
● Shown are a pair of Leahy heavy-duty, model E, single-surface, open-type, motor-driven vibrating screens with FlexElex twin heater arrangement consisting of one 20 KVA transformer handling both screens. Not only is there a savings effected by using only one transformer, but costs in the electrical hook-up are also substantially reduced. The screens are supported on Concenco twin supporting frames. The Deister Concentrator Co. offers many other interesting screens. ▲ (56)



● Allis-Chalmers has announced 2 new diesel-powered units—the 12,400 lb. HD-6 crawler tractor and the 19,600 lb. HD-6G tractor shovel with a rated capacity of 1-1/3 cu. yd. The HD-6G (shown) is powered by an A-C HD-344 engine developing 57 net flywheel hp., and 45 hp. at drawbar. The HD-6, with the same engine, offers heat-treated track shoes, positive seal, and roller bearing truck wheels. "Wrap-Around" radiator guards provide better tractor-dozer balance on both units. ▲ (57)



● Primary crushing problems are met with the release of a new 36- x 48-in. type "J" jaw crusher made by the Denver Equipment Co. Sectionalized for ease in handling component parts during installation, the frame is extra-heavy electric welded 3-in. steel plate. Cast steel is used for the heavy box section swing jaw. The shaft of this anti-friction bearing crusher rotates in oversize double roll, self-aligning spherical roller bearings placed extremely close together to prevent any possibility of shaft deflection. The crusher has an estimated capacity of 275 to 750 tons per hour, depending on the type of rock and discharge setting, which is variable between 4- and 10-in. This unit is particularly applicable in jobs where underground crushing can effect savings through reduced drilling and shooting ◀ (58)



● Demag—a German firm—has announced a new ¾ cu. yd. excavator. A dome-shaped, full-vision cab provides utmost visibility for the operator. Sliding side panels and upward-folding roof of the motor hood permits easy access to the engine. Control of the unit is by several small levers in the cab which activate the air-hydraulic system. The shovel is available on three mounts: on crawlers; truck-mounted, with separate engine for traveling; and on a wheel chassis, with traveling power provided by the engine of the shovel. ▲ (59)

● Hauling, switching, and spotting railroad cars is a snap with the new heavy-duty Trackmobile, manufactured by the Whiting Corp. The new unit has a more powerful motor, larger driving wheels which reduce slippage, improved access for servicing, built-in power brakes for the cars, and the elimination of chain drives. A protective cab for the operator is provided. This model 3-TM is able to move from track to track without difficulty and never gets stuck between cars for it can merely let down its wheels and drive off the track. A heavy-duty, helical 4-speed transmission and 3-stage reduction drive gearbox with hardened alloy steel spur gears are used for a fully geared drive. The unit hydraulically partially-lifts the car it is moving in order to develop up to 12,800 lb. drawbar pull. ◀ (60)

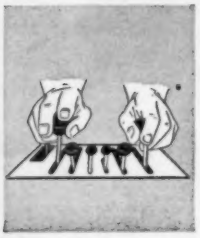
How Link-Belt Speeder engineering helps both the shovel-crane and the operator

increase earning capacity!

LS-98 with 60′ boom and 1¼ yard bucket works in sand and gravel pit.

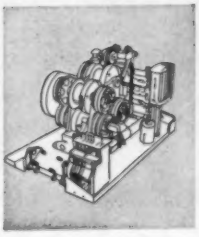
You're ahead on every job —Link-Belt Speeders—whether crawler or rubber-tired—are years ahead of the shovel-crane industry. Only Link-Belt Speeder offers you Speed-o-Matic—the true power hydraulic fingertip control system. Only Link-Belt Speeder offers you so many outstanding design, construction and operator advantages. For facts on every machine in the ½ to 3-yd, 10 to 60-ton work range—contact your Link-Belt Speeder distributor or write Link-Belt Speeder Corporation, Cedar Rapids, Iowa. 13.048

Two-way speed increase



● Speed-o-Matic, the true power hydraulic control, provides fast, easy, smooth response . . . ideal control *for speed with accuracy*. It's also engineered to *reduce operator fatigue* — enables him to maintain greater output with less effort.

Extra power, stamina



● Anti-friction bearings, splined shafts and precision-machined surfaces at every important point convert more *rated* hp into actual line pull. All-welded, stress-relieved construction permits use of extra power.

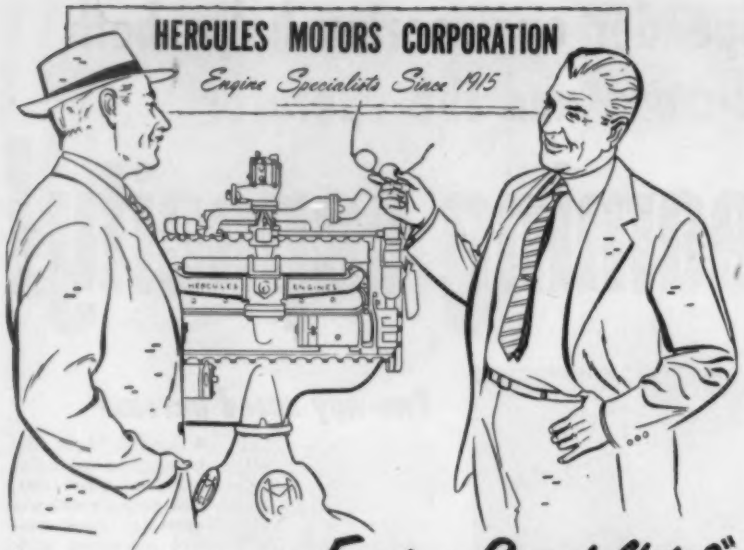
More work-time

● Speed-o-Matic reduces operator fatigue, losses due to end-of-the-shift letdown. Further, it minimizes downtime. For example, Speed-o-Matic clutch is hydraulic actuated, self-compensating. Eliminates frequent stops for adjustment.

A demonstration can be arranged to suit your convenience. See one of these great machines in action and judge for yourself why they are today's most advanced shovel-cranes.

LINK-BELT SPEEDER

Builders of a complete line of crawler and rubber-tired shovel-cranes



"What do we mean... *Engine Specialists?*"

Briefly, it means that Hercules manufactures engines to meet the customer's requirements. These engines are produced by modern methods and each engine is tailored to fit the equipment which it will power.

The wide selection of engine sizes in the Hercules line, plus the flexibility of our production facilities enable us to specialize in building engines to meet the customers needs. We have over 90 different basic engine models, ranging from 3 to 500 H.P., available for operation on gasoline, diesel fuel, L.P.G., natural gas and kerosene.

Further, it is our policy to work with customers and to help them select the type of engine best suited for their equipment. We do more than merely suggest the use of a standard type engine. Hercules engineers work with the product engineers to select an engine with accessories and other engine components modified or positioned to fit the requirements of the end product. After these engineering problems are solved and the test engine has proved itself, our production of these engines is scheduled to meet your delivery requirements.

Whether your engine requirements are for 1 or 1001, specify Hercules Engines, the product of Engine Specialists Since 1915.

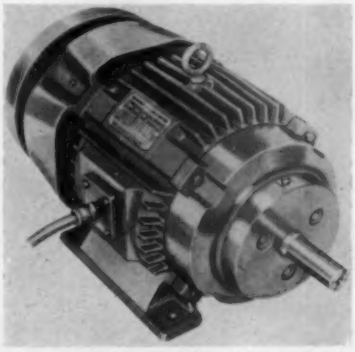
HERCULES ENGINES

HERCULES MOTORS CORPORATION

40 Years of Engines for Industry

115 Eleventh Street, S. E. • Canton, Ohio

● A new 2-axle, 4-dual-wheel trailer dump, designed for towing behind heavy-duty dump trucks, is announced by Galion Allsteel Body Co. Known as the model HH Hitchhiker, it is offered in body lengths of 15 or 16 ft., with payload capacities of 10 to 20 cu. yd. ▲ (61)

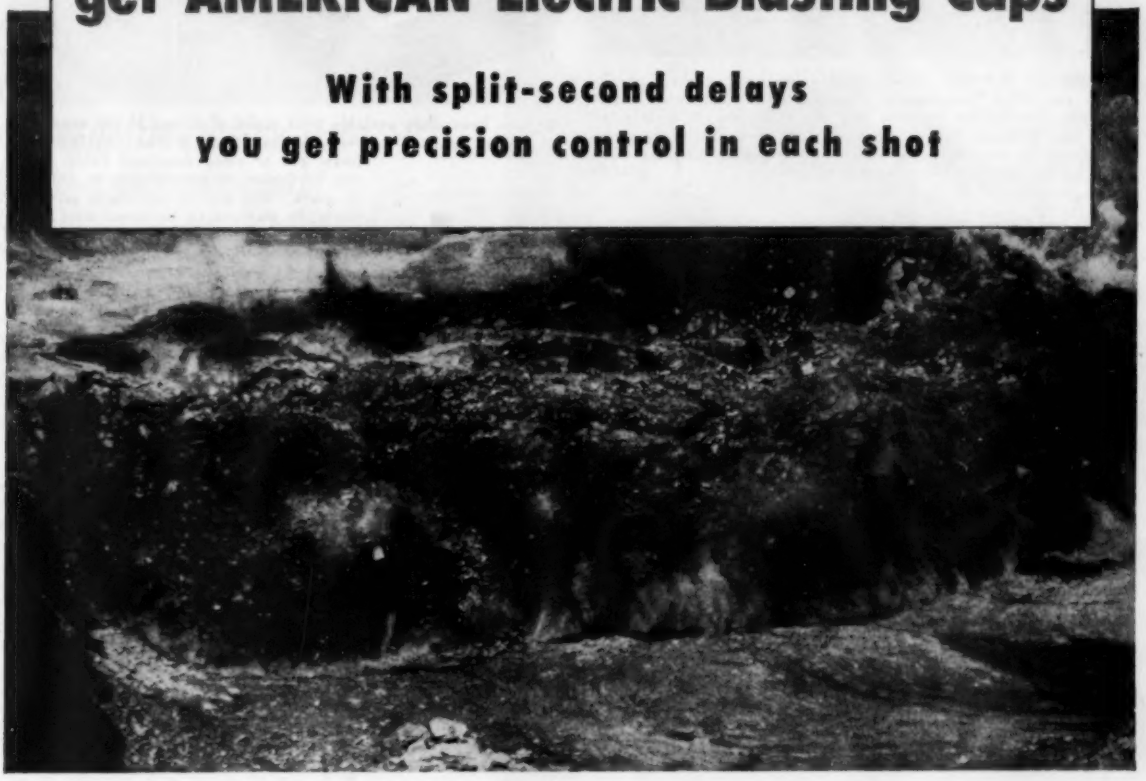


● Reliance Electric & Engr. Co. has introduced a new line of a.-c. motors which conform to the new NEMA dimensions. They save valuable space because of new engineering advances incorporated. Totally-enclosed non-ventilated construction is offered to 2 hp.; totally-enclosed air-cooled motors are standard from 3 through 20 hp. ▲ (62)

● Face injuries are greatly reduced in number and intensity when your workers wear a Skullgard-Faceshield, made by the Mine Safety Appliances Co. An aluminum pivot arm permits the shield, a clear acetate visor, to be swiveled up or down in any desired position. Being light and unobtrusive, workers will co-operate willingly in its use. ▲ (63)

Get accurate timing...
get AMERICAN Electric Blasting Caps

With split-second delays
you get precision control in each shot



Produced for closest timing accuracy, AMERICAN Electric Blasting Caps reduce the chances of overlapping and cut-through to a minimum. Your shots go off when they're supposed to, in the sequence you want.

Check these other AMERICAN advantages too:

Strength to Spare – more than enough power to detonate most insensitive explosives

Five-Layer Insulation–uniform and rugged for highest electrical and mechanical strength

Added Waterproofing – time tested for full protection in the wettest holes

Wide Choice of Delay Periods–15 split-second delays for every blasting need

So for best results on every job, call your shot with AMERICAN. Magazines are conveniently located.

THE AMERICAN LINE:

High Explosives	Electric Blasting Caps
Permissibles	Instantaneous
Blasting Powder	Regular delay
Blasting Caps	Split-second delay

Blasting Accessories

If it's AMERICAN, it's dependable!

AMERICAN CYANAMID COMPANY
EXPLOSIVES

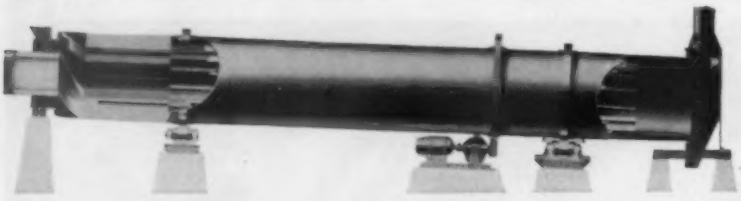
AMERICAN Cyanamid COMPANY

EXPLOSIVES DEPARTMENT
30 Rockefeller Plaza, New York 20, N.Y.

Sales Offices: Latrobe, Pa., Pottsville, Pa., Scranton, Pa., Maynard, Mass., St. Louis, Mo., Bluefield, W. Va.

● Production of 2 new turbocharged diesel engines, the Cummins NTO-6 and NT-6 Turbodiesels, is announced by Cummins Engine Co., Inc. The NTO-6 develops 262 hp. while the NT-6 is rated at 250 hp. Maximum speed of both is 2100 rpm. Essentially of the same design as the 200 hp. NH-600, the new engines have increased power by the addition of a turbocharger. (64)

● New, heavy-duty portable truck scales of 20 and 25 ton capacities have been released by the American Scale & Vise Co. The steel beam box of these American Eagle scales can be locked to prevent loss or pilfering of parts. Time-proven ball-check principle floats the platform on hardened steel bearing balls to protect the scale mechanism and pivots from shocks of trucks rolling on and off the platform. Removing only 6 bolts allows the extraction of 2 extension levers, thus reducing scale to road width for transportation. Shipping weights of the scales vary from 6700 to 8850 lb., depending on size and capacity. (65)



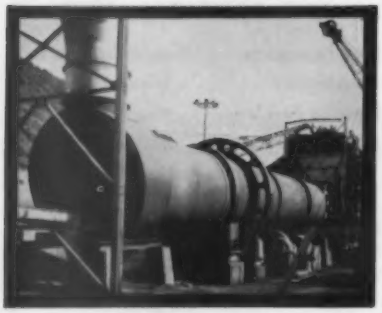
Interior of shell of "XH" Ruggles-Coles Dryer showing lifting flights and "knock-out" chains.

from **Alumina ores** to **Zircon concentrates**

... in the drying of ores and concentrates. That is the story of Ruggles-Coles "XH" Dryers.

Small or large, each dryer is designed for the specific requirements of the user with the knowledge and experience gained from hundreds of installations.

Complete specifications upon request. Ruggles-Coles Dryers are described in Bulletin AH-438-8.

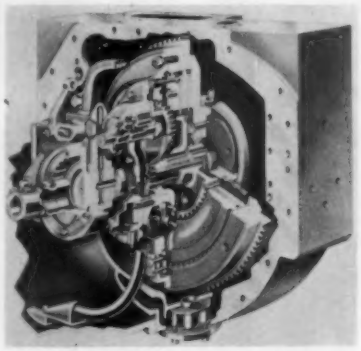


10′ diameter, 80′ long "XH" Ruggles-Coles Dryer drying bauxite.

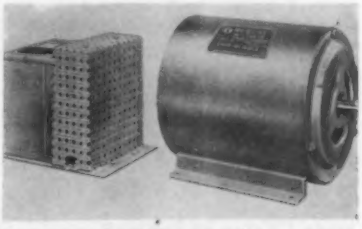
HARDINGE
COMPANY, INCORPORATED

YORK, PENNSYLVANIA • 240 Arch St. • Main Office and Works

New York • Toronto • Chicago • Hibbing • Houston • Salt Lake City • San Francisco



● A new oil clutch, now available as an attachment for D4 tractors, has been announced by the Caterpillar Tractor Co. The new clutch features metallic-faced clutch discs, a self-contained gear-type pump and oil supply clutch brake for easy gear shifting. The 3 metallic-faced plates on the new D4 oil clutch are separated by oil films at all times except for the last revolution or two as the clutch is engaged. This assures a minimum of wear and therefore less maintenance. (66)



● A new portable source of a.-c. power is offered by the Star-Kimble Motor Div. in their Mo-Bil-AC. Models delivering up to 10 KW at 110-221 v. greatly extend the use of power tools and motor-driven machinery in locations away from power lines or during power failures. Measuring only 10- x 6- x 7-in., the units are rated at 3, 5, and 10 KW. (67)

Quickest Way to Get a Refusal

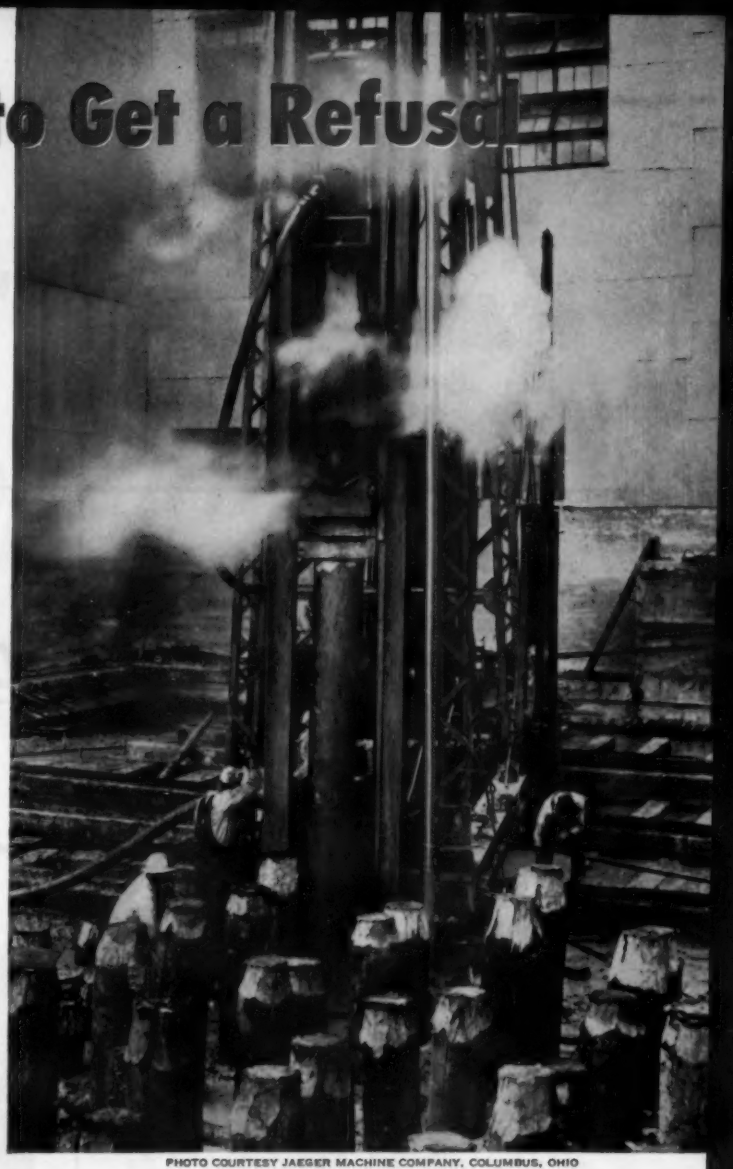


PHOTO COURTESY JAEGER MACHINE COMPANY, COLUMBUS, OHIO

Chrysler-powered jetting pumps help sink 1250 ninety-foot piles into hard-packed sand, averaging 25 per day

Job: foundation for addition to large electric power plant. Objective: bring 1250 ninety-foot timber piles to bear on hard pan underlying tight-packed sand formation. Problem: impossible to drive piles into hard sand with hammer. Solution and method of operation: two Chrysler Ind. 32-powered high-pressure Jaeger jetting pumps operating in parallel or in series as necessity required.

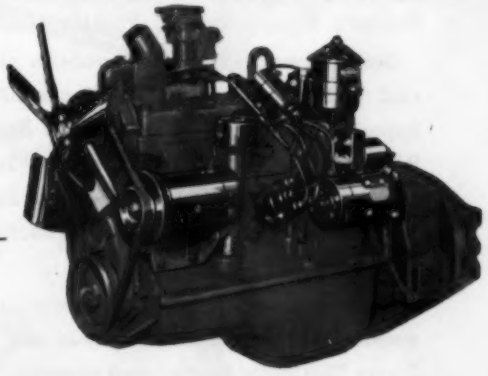
It wasn't that simple, however. Hard-packed sand is never easy to penetrate. Operating in parallel the two pumps discharged 950 gallons per minute at 200 pounds per square inch pressure to blast holes more than eighty feet deep into which the piles sank with only the weight of the hammer. Six to nine minutes of driving with hammer then brought the piles to refusal at hard pan. When greater pressure was needed, the pumps were set to operate in series delivering 475 gallons per minute at 400 pounds per square inch. At many points sand formation was so tight the jet stream would work like a hydraulic piston and send pipe and all shooting out of the ground. To counteract this, extra-heavy pipe weighing over 2800 pounds was used.

Despite difficulties the jetting operation was handled with unusual speed. On the average it took about fifteen minutes to drive a pile to refusal. As many as 33 piles were put down in a single eight-hour day. The two Jaeger Model 5 CPH Pumps and Chrysler Ind. 32—265 cubic inch displacement engines required nothing beyond regular maintenance care.

Assure your users record-breaking performance with top operating economy. Power with *proven-dependable* Chrysler Industrial Engines—230 to 413 cubic inch displacement. A long list of optional equipment enables Chrysler to supply engines to meet end product requirements.

Chrysler Industrial Engines are not expensive. Production-line methods adapted to specialized industrial engine building provide custom-built engines at mass-production prices. See a Chrysler Industrial Engine Dealer, or write:

Dept. 1311, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.



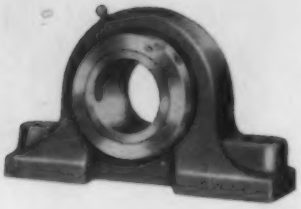
CHRYSLER IND. 32 ENGINE—
265 CUBIC INCH
DISPLACEMENT

CHRYSLER *Industrial Engines*

INDUSTRIAL ENGINE DIVISION • CHRYSLER CORPORATION

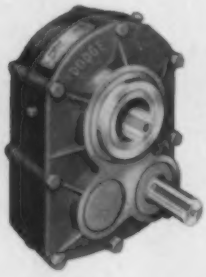
HORSEPOWER WITH A PEDIGREE

AGRICULTURE • INDUSTRY • CONSTRUCTION • OIL FIELDS



SC BALL BEARING PILLOW BLOCKS

TAPER-LOCK SPROCKETS



TORQUE-ARM SPEED REDUCERS

Faster unloading, more careful handling, and dependable operation are reasons for the widespread acceptance of Superlite Unloaders of brick and concrete products. Users have found they can double the rate of deliveries, with no hazard of chipping of bricks or blocks, by equipping trucks with these products of the Builder's Equipment Co., Phoenix, Arizona.

Dodge power transmission products play a vital part in achieving the dependability of Superlite Unloaders. Dodge SC Ball Bearing Pillow Blocks—Taper-Lock Sprockets—Taper-Lock Sheaves—Dodge Torque-Arm Speed Reducers are important elements in each Superlite unit.

Whenever you have a problem in the mechanical transmission of power see your Dodge Distributor for the latest answers.

DODGE MANUFACTURING CORPORATION
4000 Union Street, Mishawaka, Indiana

Where Dependability Counts
– it's DODGE!

SUPERLITE UNLOADER—DODGE EQUIPPED

DODGE
of Mishawaka, Ind.

Call the Transmissioneer, your local Dodge Distributor. Factory trained by Dodge, he can give you valuable assistance on new, cost-saving methods. Look for his name under "Power Transmission Machinery" in your classified telephone directory, or write us.

Give your product

"Sacks Appeal!"

GOOD LOOKS never fail to attract.

Even when it comes to shipping sacks.

So . . . if *your* shipping sacks lack warmth and brilliance of appeal, let us give them our S. A. treatment which never fails to create real interest on the part of both prospect and present buyer.

By all means send for evidence as to how our exclusive Kolorseal process assures a fine, highly-colorful reproduction of impressive copy and design!

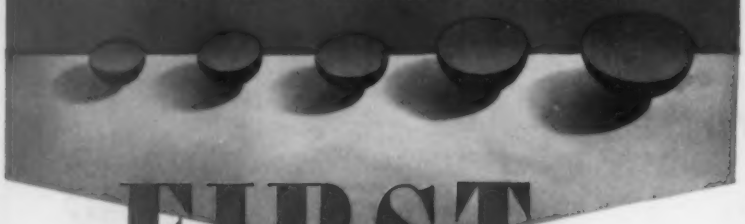
Better yet, call in the Raymond man! No obligation in the least.

THE RAYMOND BAG COMPANY
Middletown, Ohio. Phone 2-5461

Raymond

MULTIWALL PAPER SHIPPING SACKS

We had to convince ourselves



...FIRST

Calumet's decision to manufacture Calumet Ni-Hard* grinding balls, is based on years of experience as a leading producer and refiner of copper ores.

From this experience Calumet and Hecla knows—definitely—exactly what a user expects from grinding balls—in grinding ability, durability, initial cost and overall costs.

That's why the first Calumet Ni-Hard grinding balls produced were tested for a year—*in our own mills.*

the results were impressive!

In wet grinding of copper ore Calumet Ni-Hard grinding balls demonstrated a *75% greater resistance to wear with a more than 40% reduction in grinding ball costs per ton of ore ground.* In dry grinding, the results were equally impressive. Calumet Ni-Hard grinding balls proved to be *4 to 1 times greater in wear-resistance* than forged steel balls.

These are job-tested figures. They prove conclusively how Calumet can help you obtain greater efficiency and lower costs in your own grinding operations.

Calumet Ni-Hard grinding balls are rigidly quality-controlled—laboratory-tested to insure meeting Calumet's own high standards. They are available from stock in the following sizes: ⅝", ¾", ⅞", 1", 1¼", 1½", and 2".

Test Calumet Ni-Hard grinding balls in your own mill. See for yourself how they can increase tonnage and lower costs. Write, TODAY, for information.

**Reg. U.S. Pat. Off., Intl. Nickel Co., Inc.*

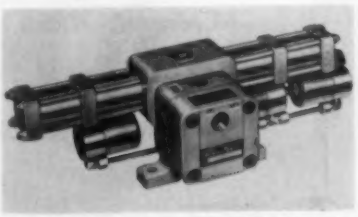
CALUMET DIVISION

of Calumet & Hecla, Inc.

1 CALUMET AVENUE • CALUMET, MICH.

● Crane overloading is virtually eliminated by employing a Dillon traction dynamometer. Dumping of expensive cranes can be stopped by carefully watching this instrument which is available in models of capacities from 0-500 lb .to 0-100,000 lb. Either 5- or 10-in. dials are optional on ranges up to 20,000 lb. with 10-in. dials standard for the higher capacity sizes. ▲ (68)

● Precision Scientific Co. has redesigned the Blaine air permeability tester used in determining the fineness characteristics of cement and other granular materials. This light and compact instrument now conforms with current ASTM and federal specifications for cement testing. ▲ (69)



● Featuring power operation to forward, reverse, and neutral, the Ledeen PON valve is a standard Ledeen 4-way disc valve for air, gas, oil, or water service, controlled by a Ledeen 3-position power attachment operated by air or gas. ▲ (70)

2¼-yd. MICHIGAN 175A carrying full load low up a grade . . .

This big POWERHOUSE handles bigger jobs cheaper!

Check the specs of the MICHIGAN* 175A:

BUCKET CAPACITY..... 2¼ yds.
WEIGHT..... 24,100 lbs.
LIFTING CAPACITY..... 15,000 lbs.
SPEED..Up to 27 mph, Forward and Reverse
HORSEPOWER..... 133 Diesel, 126 Gas, 165 Supercharged

Don't look for "comparative" data on the MICHIGAN 175A—there is *no machine comparable.* This big bruiser is nearly 50% bigger than the next closest machine on the market. From flywheel to bucket, the 175A is built to do bigger, heavier jobs—jobs that no other rubber-tired machine can handle.

Better traction and flotation With the MICHIGAN's exclusive power train—300% torque multiplication, power shift transmission (no engine clutch) and planetary wheel axles—you get a shockless flow of power right down to the ground. There's no surge, no wind-up in the axle shaft, no wild wheel-spin. The operator has feather-touch control over his wheels; in weak soil conditions or mud, he can ease off or step up the power to keep from digging in. With this kind of smooth power transmission, you get the full advantage of the MICHIGAN's extra weight and power—you dig material *out*, you don't dig the machine *in*.

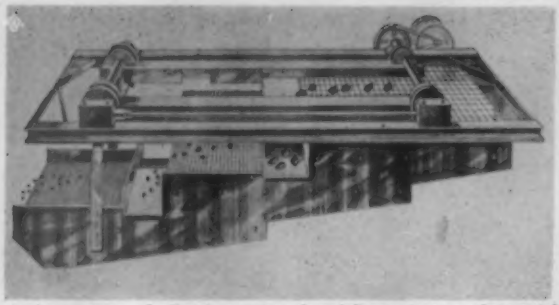
Hydraulic power does the work In spite of its size and power, the MICHIGAN 175A is easier to operate than most machines one-third its size. Hydraulic power does all the real work: power steering, 4-wheel power brakes, power-shifting with two simple levers on the steering column, no clutch pedal.

See it in action! We'll prove that the MICHIGAN is in a class by itself in the Tractor Shovel field: your local MICHIGAN distributor will arrange a demonstration—on your own job, if you wish. Or write for 12-page Tractor Shovel booklet containing explanation and cutaway drawings of the MICHIGAN power train. Any MICHIGAN is available on a low-cost Lease Plan—ask for brochure which explains how you can use it.

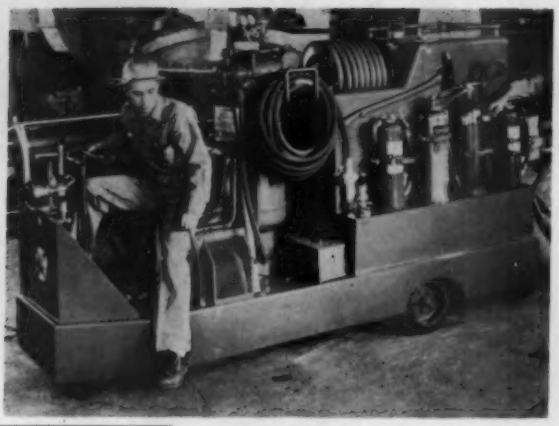
CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY
Construction Machinery Division
450 Second Street
Benton Harbor 30, Michigan
Phone WA 6-6184

*A Trademark of Clark Equipment Company

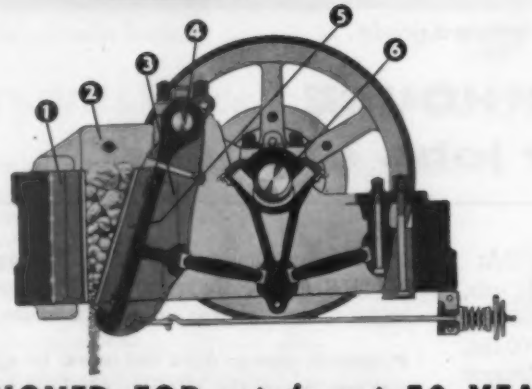


● A new type of vibrating screen that delivers 60 tons of material with approximately 4 hp., is announced for licensing of manufacturing rights by Wheeler Co., Inc. Screens are horizontal thus assuring efficient screening with a minimum of headroom required. All working parts are above and away from the screening mechanism itself. ↟ (71)



● Introduction of a complete line of easily maneuverable in-plant fire trucks has been announced by the Ansul Chemical Co. Designed to carry a wide assortment of fire fighting equipment and especially adaptable to the needs of plant fire brigades, the trucks are being made by St. Clair Industries. They will be distributed through the Ansul Sales organization. ↟ (72)

FARREL-BACON JAW CRUSHERS



DESIGNED FOR *at least* 50 YEARS OF SEVERE CRUSHING SERVICE

The frame of a Farrel-Bacon jaw crusher is cast in one piece from Meehanite® metal to take the shock of prolonged and severe crushing service. At points of wear this frame is protected by parts which absorb any wear that might occur, and can be easily replaced at minimum cost.

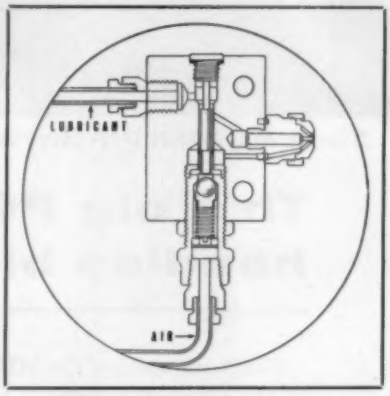
Some of the places at which wear has been "designed out" are: (1) ROUND BACK—provides a machined seat for the fixed jaw plate and prevents damage to the main frame. (2) CHEEK PLATES—protect frame sides; made in two pieces for economical replacement. (3) FALSE CHEEK PLATES—hold cheek plates, and prevent wear on frame at this point. (4) SWING JAW SHAFT—pinned rigid in frame bearing to prevent wear on frame casting.

Many of the working parts are preserved similarly. The swing jaw has a replaceable wearing plate (5), and the main bearings (6) can be easily removed and rebabbitted in the shop.

Farrel-Bacon can help you lay out your plant as well as supply all necessary equipment from primary crusher to bin gate. Write for further details.

FARREL-BACON
Ansonia, Connecticut

BA-6



● The Farval Corp. offers this booklet on their centralized lubrication systems. It gives full details on the simple, fool-proof arrangements available from the company. A full line of fittings and accessories is also available. The firm's Dualine measuring valve has no springs, check valves, or small parts to cause trouble. ↡ ↟ (73)

International diesel power units provide dependable, low-cost power for shovels, crushers, etc. Here, McMillan Constr. Co., Denver, uses 115 hp IH diesel to power ¼-yard dragline . . . 190 hp IH diesel on 200-ton-per-hour crusher.

only INTERNATIONAL builds all these major advantages into diesel engines

1. Full-flow lube oil filters lengthen engine life

New replaceable plastic impregnated full-flow filters increase engine life by removing all harmful particles from the oil before it goes under full pressure to engine bearings. Exceptionally large filter area extends filter change period to 500 hours under normal conditions.

2. New injection pump reduces maintenance

Time proven International single and twin plunger pumps have been further simplified for longer life and lower cost maintenance. Scavenging gears and pump air pipe are eliminated . . . hardness of injection plunger increased for up to four times longer life.

3. Drilled passages assure full-time lubrication

You can be sure *all* engine bearings will be lubricated at *all* times. Lube oil is pressure-pumped through internal rifle-drilled passages that can't rupture or work loose.

4. Clean combustion on low-cost fuel

Trouble-free single orifice injection nozzles, and precombustion chambers mounted at 45° angle thoroughly mix fuel and air under all load and speed conditions. You get follow-through power strokes, clear exhaust, smooth idling on low-cost No. 2 fuel.

5. Fast, sure starting . . . always

Never mind cold—IH diesels work year 'round, even in the Arctic. Seconds-fast, they start in any weather on gasoline . . . and, seconds-fast, you switch to clean-burning, full-diesel power.

Six sizes of diesels, 52 to 190 hp, complete with radiator and fan. Also 12 models, 16½ to 200 hp, for gasoline, natural gas or LPG. See your nearest International Distributor for details.

INTERNATIONAL INDUSTRIAL POWER

Bemis Multiwalls made with RUF-GRIP kraft handle easily . . . and stack easily . . . and stay stacked. Consequently, they ship and store better. Get the details from your Bemis Man.

* TRADE-MARK

Bemis

General Offices—St. Louis 2, Mo.
Sales Offices in Principal Cities

P & Q product briefs

(use reply card for more information)

CRUSHING equipment is the specialty of the Crusher Engr. Div. of Poor & Co. Included in their line of Hy-Ton products are breakers, reversible and non-reversible hammermills, non-clog and adjustable cage hammermills, ring type mills and crushers, impact mills and crushers, crushers for primary and secondary crushing designed to meet specific job conditions, and rolls and jaws which are being currently engineered or pending. **Circle No. 74**

●

CLAMSHELL BUCKET care and maintenance is the subject of this booklet from the Blaw-Knox Co. Subjects covered in this valuable work include: use of counterweights for maximum efficiency; when to increase or decrease bucket reeving; what makes bucket lips bend in or bow out; cable life; and welding procedures for building up and repairing. Numerous other items include a list of common abuses leading to early bucket failure and proper lubrication practices. **Circle No. 75**

●

POWER SHOVEL type 24 made by the Baldwin-Lima-Hamilton Corp. is the subject of this brochure. It describes the 13- to 15-ton Jobmaster's many applications as shovel, crane, dragline, or pull shovel with crawler, wagon, or truck mountings. **Circle No. 76**

●

INSTRUMENTATION is easy when you order the bulletins applicable to your problem by using this publication guide offered by the Minneapolis-Honeywell Regulator Co. It also describes the concern's publications: Instrumentation magazine, Industrial Control News, and the paper-bound textbook, Fundamentals on Instrumentation. **Circle No. 77**

●

MOTOR SCRAPER, TS-360, is a new "Big-Capacity" unit manufactured by Allis-Chalmers. Capacity of the vehicle, which is powered by a 280-hp. Allis-Chalmers diesel engine, is 20 cu. yd. heaped or 15 cu. yd. struck. This pamphlet gives full specifications and shows how the scraper incorporates ideal weight distribution. **Circle No. 78**

●

LOADING is simplified and speeded when using the Athey HiLoader. This versatile unit has an 18-ft. discharge conveyor which swings 55 deg. to either side of center, under hydraulic power, or a 13-ft. conveyor which swings 45 deg. All conveyor directional changes are made from the operator's seat by moving a single hydraulic lever. Non-stop turns can be made in a 23-ft. radius. **Circle No. 79**

●

PYROMETER USERS are given service tips in this release from the Barber-Colman Co. Some of the important tips covered by this brochure include: what to do if the instrument reading is erratic, the instrument temperature curves off, the instrument reads too high or too low, or if the instrument controls erratically. **Circle No. 80**

●

ATTACHMENTS for Caterpillar-built tractors are listed and described in this valuable catalog. Among the many items in the work are hydraulic steering boosters for motor graders, cast steel final drive cases, rolled steel crankcase guards, and electric starting systems. **Circle No. 81**

Every U. S. Rainbow V-Belt has its own built-in salesman

THE FAMOUS EQUA-TENSIL CORD SECTION

This unique "U. S." development insures that each of the cords pulls its own share of the load—for full strength under all operating conditions. Known as the Equa-Tensil Cord Section, it constitutes a sales point no plant man interested in performance and long life can resist.

U. S. Rainbow® belts have other strong selling points too:

(1) They keep cool under constant stretch and return (because the top rubber cushion is in perfect engineering balance with the lower one).

(2) Inherent stretch is worked out beforehand in the factory, yet enough elasticity is retained to enable the V-Belt to take the heaviest shock loads.

(3) Straight sidewalls grip the grooves the full height of the belt, giving complete contact for greater non-slip pulling power.

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THE GREATEST NAME IN ELECTRICAL WIRE AND CABLE

Widely used on electric shovels, dredges, mine locomotives, shuttle cars, mining machines, blast hole drills, mixers, welders, magnetic cranes and other portable power equipment...new, improved SUPER SERVICE will furnish longer life and reliable service under the most severe operating conditions.

With its new SUPERTUF metal mold cured jacket and new THERMAX insulation...the new SUPER SERVICE has no equal for safety, for durability, for continuity of service!

SUPER SERVICE resists *all* the costliest hazards far beyond the accepted field requirements. It resists flexing, crushing, impact, tearing, flame, heat, oil, chemicals, weather, and, most important, abrasion.

Result: a well balanced product that helps you to hold down overall operating and maintenance costs. Yet SUPER SERVICE costs no more than ordinary cables! Ask your friendly General Cable Representative or Distributor for complete data. And, remember, he represents the *only* manufacturer who can supply *all* your electrical wire and cable needs!

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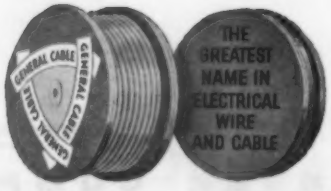

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The LINE forms on the RIGHT!

For these NEW **PAYLOADER**® tractor shovels

We anticipated some of this demand....

But apparently not enough....

We're increasing our production....

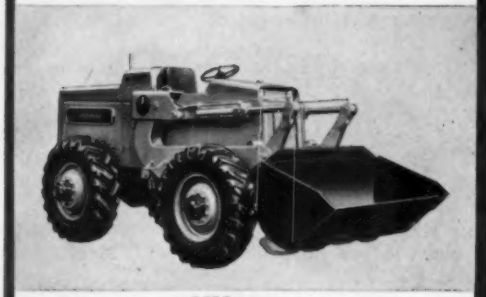
We're expanding our facilities....

However, since these new models outproduce and outperform other tractor-shovels, we expect the demand to increase even more. If you are interested in more production at lower costs, your future needs will probably include one or more of these new "PAYLOADER" models.

Because of the current demand we suggest you contact your "PAYLOADER" distributor *at once* and discuss your needs with him.

These new models have been designed and are being built by The Frank G. Hough Co. who introduced the first four-wheel-drive tractor-shovel and who have produced more unit-design tractor-shovels than all other firms put together.

model HU *1 cu. yd.*



model HH *1½ cu. yd.*

model HO *2 cu. yd.*

The complete proven "PAYLOADER" line of tractor-shovels includes sizes ranging from 18 cu. ft. to 2 cu. yd. bucket capacity and available in four wheel drive, rear wheel drive and front wheel drive types. They are sold and serviced by the largest, most experienced Distributor organization in the business.

PAYLOADER®
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Send information on "PAYLOADER"
☐ model HU ☐ model HH ☐ model HO

Name.....
Title.....
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Street.....
City.....
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Screenings

by Ray L. Smith, Jr.

IT'S the application of darn smart selling sense that brings your milkman . . . your filling station attendant . . . your oil delivery man . . . your parcel post man . . . your Good Humor man . . . to you in neat, clean, freshly pressed, well-tailored uniforms. Why? Because some joker correctly figured that you . . . your wife . . . your kids . . . instinctively believe that milk or ice cream is bound to taste better . . . be cleaner and healthier . . . if it's dealt out by a guy who looks as clean and neat as you want your food to be. Because, whether you've stopped to think about it or not . . . you'd rather, other things being equal, run your car and your oil burner on gas or oil pumped by a fellow whose uniform is as snappy and clean as you hope his product will be.

How many dozen times have you backed away from a hamburger stand . . . a garage . . . a store . . . simply because its sloppy looks led you to feel that its product would be equally sloppy? It's smart to put your best foot forward.

Tinted Roads

AN ITEM from Rome, Italy offers a change of thought for those of us who are getting a little color-blind from so many two-tone automobiles. Comes next the tinted highway.

The Abruzzi Asphalt Society has announced the road of the future could come in selected colors. Its chemists are experimenting with colored asphalt obtained as a left-over from the extraction of aluminum from bauxite rock.

"The stuff would make good, strong highways and might come in variations of red, green, white, brown or yellow," the society said.

It might be good for telling drivers which way to go. For instance: Follow the red road to Cleveland and the beige road to New Orleans. If they could make the road a good gold color, it could lead nowhere but Miami.

Radiated Cement?

EARLY this spring, a gentleman down in Conway, Ark., hurrying to go fishing, mistakenly sprinkled 10 quarts of cement on his onions, radishes, mustard and spinach.

Reports have it, that all through the summer the vegetables were several days growth ahead of another nearby untreated plot. At harvest time, he had the biggest produce in the neighborhood.

You'd think a vegetarian diet like that would make one a bit lethargic after a while.

Rock-Crusher Nursery

AMID the clatter and rattle of heavy machinery, a humming bird spent most of the summer in a tiny nest above the rock-crusher at Meade Sand and Gravel Co., Midway, Wash.

The dainty bird sat on a lone light-blue egg about the size of a jelly bean. Workmen at the plant were careful not to dislodge the nest or disturb the bird.

Our spies have not reported just when the blessed event took place, but it's a cinch baby had a tough time competing with all the noise. Mama was probably so deaf she couldn't hear the slightest "peep."

Liquid Granite

AN ITEM from New York tells us that Fordham University now owns a solar furnace that can melt a piece of granite in three seconds.

Dr. Tibor S. Lazlo fashioned the furnace from a surplus army searchlight. It traps the sun's infra-red rays and can concentrate 6,044-degrees farenheit . . . about half the surface temperature of the sun . . . on a spot the size of a dime.

Betcha when Dr. Lazlo isn't melting rocks, he is whipping up a good soufflé.

He: "What do I have to give you to get one kiss?"

She: "Chloroform!"

Potpourri and Succotash

"Daddy, my teacher wants me to prove that the white man is superior to the Indian," said Johnny. "Can you help me?"

"Don't think so," replied Daddy. "When the white man took over the country the Indians were running it. There were no taxes. The women did all the work. How could they improve on a system like that?"

Bridget had been discharged. Extracting a $5.00 bill from her roll, she threw it to Fido. Then the shocked mistress heard her exclaim: "Sure'n I never forget a friend. That's for helping me wash the dishes."

There's usually only one reason why a man buys, but with a woman it might be one of eight:

1—Husband says she can't have it.
2—It will make her look thin.
3—It comes from Paris.
4—Her neighbors can't afford it.
5—Nobody has one.
6—Everybody has one.
7—It's different.
8—"Because."

"Good morning" said a stranger to a woman who had answered the door bell. "Would you like to buy some insect powder?"

"No," she snapped. "I have no use for that stuff."

"Good," replied the stranger. "Then I'll take that room you are advertising."

Explanation for the do-it-yourself boom comes from a Chicago businessman who says it stands to reason a 75-dollar-a-week salesclerk can't hire a 135-dollar carpenter.

A big burly Texan walked into the bar of a famous night club, saw a customer lying helpless on the floor, and pointing to him said: "Man, I sure would like to try some of that."

Three Kue-Ken Gyratory Crushers fitted into this existing plant with minimum alteration.

Less head room needed with KUE-KEN Gyratory Crusher

Unusually low head room requirement simplifies by far the addition of gyratory crushing to your plant operation. Kue-Ken is a stronger crusher yet more compact and lighter. Largest, long-wearing shaft and bearings. Takes choke feed.

Kue-Ken is the only gyratory crusher that operates on the "crushing without rubbing" principle. Rubbing, the main cause of liner wear, is substantially reduced. Liners last far longer than with other crushers. Short stroke makes for smooth operation and more uniform product.

• Write for catalog •

KUE-KEN CRUSHERS

"LOWEST COST-PER-TON CRUSHING"

Jaw Crushers Gyratory Crushers Overhead Eccentric Crushers Revolving Screens
Classifiers Feeders Rib Cone Ball Mills Concentrating Tables Vibrating Screens

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Pennsylvania Crusher Division, Exclusive Licensed Eastern Manufacturer and Distributor, 323 S. Matlack St., West Chester, Penn.
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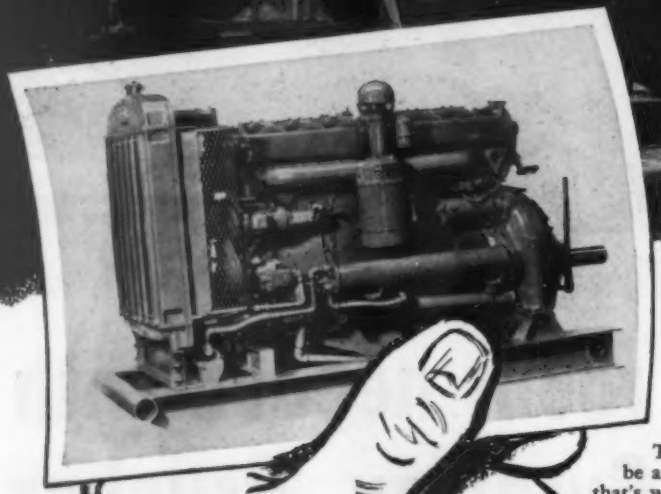

until you put MURPHY DIESEL into it!

The best crushing plant in the world can't be any more efficient than its power plant. And that's why more and more aggregate producers are turning to Murphy Diesel Power. Heavy duty Murphy Diesels offer an exclusive combination of design features that make it possible for you to get more aggregate per dollar of power costs. With Murphy Diesel in the picture you get greater fuel economy, longer life and dependability unmatched by any other engine of comparable size. It all adds up to a prettier profit picture for you.

Murphy Diesel offers three types of power to best suit your needs—standard power units, electric generating sets and Mech-Elec Units which will supply both mechanical and electrical power separately or simultaneously. Ask your Murphy Diesel Dealer to give you complete information on the unit that will serve you best.

MURPHY DIESEL COMPANY

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Sales, parts and service throughout the nation

MURPHY DIESEL

310

***Heavy duty power* for rock crushing**

Murphy Diesel Engines and Power Units are available in sizes from 96 to 264 H.P. Engine speeds are 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 60 to 165 K.W.

ball mill and classifiers provide accurate control of sand gradation

New Material Service Plant Opened at Algonquin, Ill.

another ON THE SPOT report

ANOTHER supply of sand and gravel was tapped this year by the Material Service Corporation of Chicago, to meet ever greater demands for raw material on construction projects in the metropolitan and

By BUREN C. HEROD

suburban areas which it serves. Shipments were started last April from the completely new crushing and screening plant at Algonquin, Ill.

With the end in sight at the former South Elgin operation late last year, the company got the Algonquin project under way in October, 1954, on an acreage held in reserve for several years. Located in the Fox River Valley, the new plant is near the main line of the Chicago and North Western Railway, which also serves the company's material supply yards in Chicago.

The deposit is predominantly limestone gravel of glacial origin. With definite gradation from finer material in the lower levels to coarser above, the recoverable section varies from 30 to 65 ft. in thickness. Although there is a range in depth from 18 in. to 9 ft. over the length of cut, the average overburden is only 3 ft.

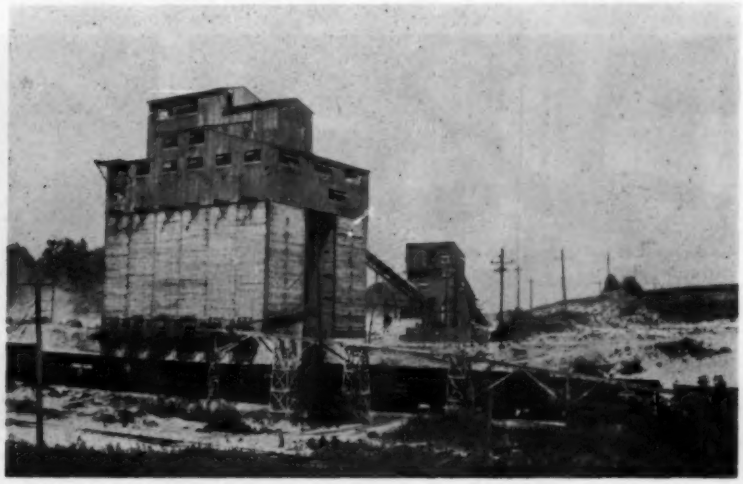
Material Service sent its construction department to the property last fall and began excavation at the plant site. While taking advantage of local topography for the minimum of earthmoving in establishing a spur track grade, the crew encountered the problem of a marsh area at the proposed plant location. A stratum of relatively impervious and firm clay underlays the area and holds undesirable water above the natural water table. After excavating from 9 to 12 ft. of cover, approximately 6 ft. of gravel was laid on the clay, and a 2-ft. concrete mat was poured above the gravel. On this base, reinforced concrete walls were poured to a height of 18 ft. The 45-ft. deep bin area was constructed above these walls by laying 2- by 8-in. lumber flat, with lap joints, and bracing longitudinally with 1½-in. steel rods.

Above the 12 bins—six on each side—steel framework was erected and covered with corrugated siding and roofing. This provided 40 ft. of headroom from the top of the bins to the head pulley—the overall high construction being dictated by the desire for substantial, enclosed, live storage capacity. Each of the 12 bins, which measure approximately 12 by 20 by 45 ft., will hold about 350 cu. yd. of material.

The deposit was reopened at the shallow end of the old pit, thereby

Herbert Fudge, left, plant superintendent, and Wally Wonders, divisional superintendent of the operating department.

A view at the site of the new Material Service plant near Algonquin, Ill. The bin area of the screening plant is constructed of 2 by 8 lumber laid flat atop 18-ft. concrete walls. The top portion is corrugated siding. The smaller building (right background) is the crusher house.



This dragline at the pit is loading a bottom-dump diesel haulage truck.

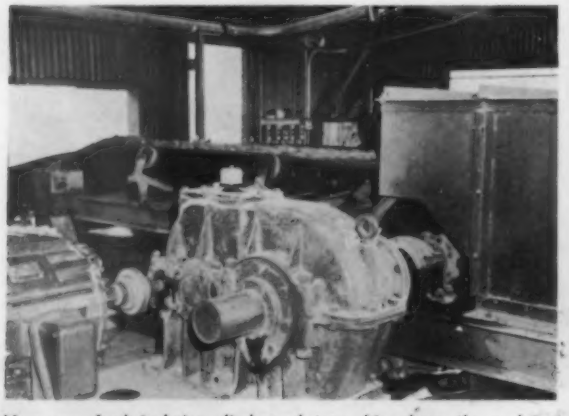
From the hopper below the grizzly (where the truck is dumping) this conveyor carries raw feed up to the crusher house.

quickly establishing raw feed to the plant by taking advantage of a short haul and easier digging. A 4-cu. yd. 111M Marion electric dragline with a 90½-ft. boom is used to work the deposit and also to strip overburden when the excavation is advancing. The dragline loads into 20-ton, 43 FDT, Euclid bottom-dump trucks powered by GM diesels. Three of the six haulage units available are kept in standby status. From the farthest point of estimated digging, the maximum one-way haul is approximately a half mile, and all on a favorable downhill grade with load.

At the plant site, the "Eucs" dump on an 8-in. rail grizzly mounted over a 180-ton live storage hopper. Very little of the material is held on the grizzly since only approximately 100 tons of the 375 t.p.h. raw feed is plus 2 in. This reinforced concrete hopper is 28 ft. from grizzly to floor. Sand and gravel is fed at the bottom by a No. 5 Jeffrey-Taylor magnetic vibrator feeder onto the belt of the tunnel conveyor, which is assembled on Barber-Greene trusses and driven by a 50-hp. totally enclosed Allis-Chalmers motor through a Jones herringbone 210 DHA reducer. The 36-in. Goodrich belt, 210 ft. center to center, carries the material at 350 f.p.m. on an 18-degree lift from the hopper tunnel to the crusher house.

At this point it is discharged onto the scalper—a 5- by 14-ft. Type B Allis-Chalmers vibrating screen. Minus 8-in., plus 2-in. oversize is scalped on the top screen and fed to a 4-ft. standard Symons cone crusher powered by a 100-hp. 900 r.p.m. Allis-Chalmers motor. From the lower deck, minus 2-in. plus 1¼-in. gravel is sent to a 4-ft. Symons shorthead crusher, which is driven by a 150-hp. 900 r.p.m. Allis-

(*Continued on page* 74.)



Here raw feed is being discharged to a bin above the scalping screen in the crusher building.

Sand and gravel conveyed to the top of the screening plant is discharged on this double-deck vibrating screen.

This Tough, Trouble-Free Belt Takes Heavy Loads In Stride

Here's an economical, tough belt for hauling heavy loads of coal, ores or aggregates in operations where long conveyor centers are necessary. Its troughability is good and its fastener holding is superb.

A sturdy, multiple-ply, rayon duck carcass makes this belt lighter and thinner than cotton-carcass belts of comparable strength. Skim coats between plies insure perfect bonding.

Like other heavy duty belts, these LOADLINER belts are custom made to meet particular requirements of individual jobs — unlimited length, widths to 72″. They can be made with a cover tensile strength of 3500 to 4000 pounds average and a friction pull of 20 to 24 pounds; or with a cover tensile strength of 2500 to 3000 pounds and a friction pull of 16 to 19 pounds; also available in oil-resistant Neoprene. All are mildew inhibited throughout. A breaker strip can be included in top cover, if specified.

We also manufacture a complete line of industrial rubber products: belting, hose, packing and moulded rubber of every construction for every need. *Through your Quaker and Quaker Pioneer distributor* our research and engineering services are always available to help you solve any industrial rubber problem. *Write for name of nearest distributor.*

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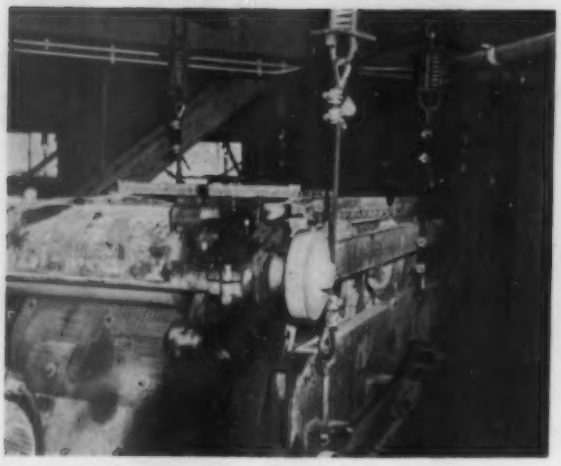
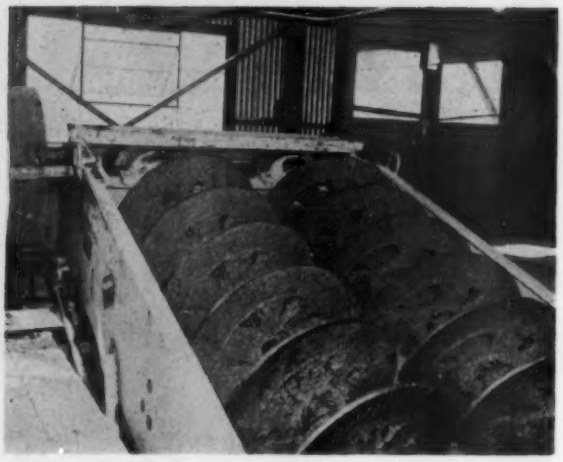


This horizontal vibrator is one of four which further size the material retained on the top deck and one section of the bottom deck of the main screening unit.



One of the three 36-in. sand classifiers which process sand and rod mill discharge.

Chalmers motor. Bottom-deck throughs go directly to the conveyor feeding the screening plant.

The crushing circuit is closed by a 100-ft. conveyor with a 24-in. Hamilton belt driven by a 10-hp. 1800 r.p.m. G-E motor through a Falk Motoreducer. This conveyor discharges crushed gravel onto the raw feed belt carrying material from the truck hopper to the scalping screen. Discharge from the scalper is so arranged that all sizes—other than top-deck oversize—can by-pass the crushers and be sent directly to the screening plant.

From the crusher building, material is carried to the screening plant on the 30-in. belt of a 218-ft. conveyor with an 18-degree rise. Drive is furnished by a 40-hp. 1770 r.p.m. G-E motor through a Jones herringbone 210 DHA reducer. This conveyor, along with the preceding two, is covered by corrugated metal half culvert sections hinged on one side for easy access to belt and idlers.

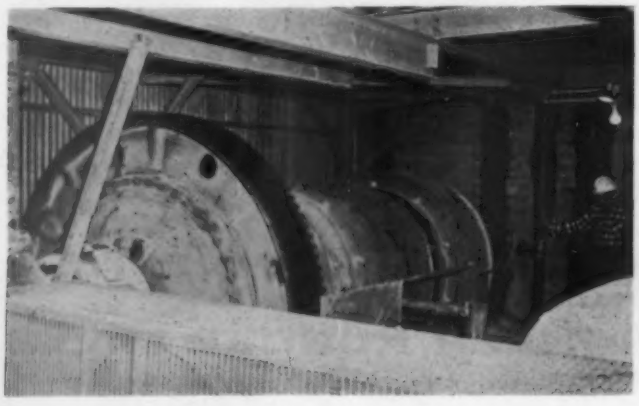
At the top of the screening plant the sand and gravel is discharged onto a 6- by 16-ft. double-deck Allis-Chalmers full wet Lowhead vibrating screen. The minus 1¼-in. plus ½-in. gravel retained on the top screen is divided and chuted to two 3- by 16-ft. Symons vibrating screens, where it is again rinsed through the first 8 ft. of deck. From the four-section split-bottom deck of the Allis-Chalmers unit, No. 1 sand (through ⅛-in. screen cloth) is flumed to a 30-in. Eagle Iron Works twin-screw sand classifier, and No. 2 sand (through No. 4 mesh cloth on the second and third sections) is fed to a 36-in. and a 30-in. Eagle twin. Sand discharged from the three classifiers is dropped directly into the proper bins.

Overflow from the sand classifiers is pumped to the tank of a 30-in. Whirlcone separator by a Georgia Iron Works 8- by 8- by 6-in. slurry pump for recapture of desired fines in the wash water. These fines are then returned to the discharge end of the classifiers, and, with the rest of the sand, is flumed to appropriate bins.

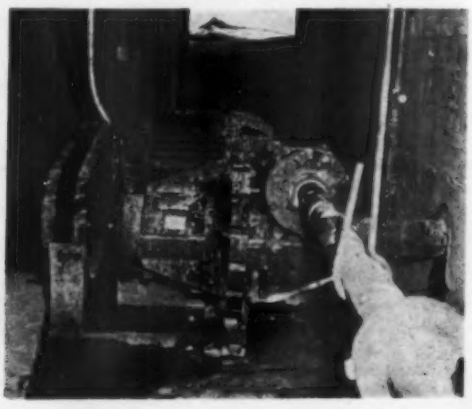
Gravel retained on the fourth section of the split-bottom deck (minus ½-in. plus No. 4) joins the top-deck oversize in feed to the following two Symons vibrators, on which ⅜-in. opening top screens, and No. 4 bottom screens are used. Rejects from the top decks are chuted to the proper bins. The throughs (minus No. 4) of the bottom decks are flumed to the sand classifiers. Bottom-deck oversize (minus ⅜-in. plus No. 4) is chuted to a bin from which it is sold as pea gravel, or used to feed the rod mill.

When put to the latter use, this gravel is conveyed from the bin to the rod mill—a 5- by 12-ft. Allis-Chalmers mill with end peripheral discharge—on an 18-in. by 45-ft. conveyor. The mill, which revolves at 25 r.p.m., is driven by a 150 hp.

The rod mill, recently installed, is supplied with pea gravel to produce more fine material.



One of the two rubber-lined pumps which take rod mill slurry and pump it to the sand classifiers.



G-E motor and is charged with 27,220 lb. of 1½- and 2-in. rods. Slurry from this unit is pumped by two 5- by 4-in. NRIC single-stage rubber-lined Allis-Chalmers pumps through a 3-in. line to the sand classifiers, where it joins the throughs from the first three sections of the bottom deck on the first screening unit.

When the various adjustments necessary in a new plant have been completed, there will be a 30 t.p.h. feed to the mill, with a resultant better grade of fines. This will allow bringing No. 2 torpedo sand up to state specifications of 15 percent passing 50-mesh and 5 percent passing 100-mesh. In short, the rod mill is being used to produce a usable product from potential waste. A double-roll Austin-Western 18- by 30-in. crusher is held in stand-by status in the event of rod mill shut-down, or to meet even greater demand for the finer material. This crusher discharges material onto the 18-in. belt of a 69-ft. conveyor, which carries it up a 10-degree rise to a transfer point. The crusher product is then fed to the primary feed belt which supplies the Allis-Chalmers Low-head screen.

In addition to the Symons vibrators previously mentioned, two others of the same manufacture are installed to meet full capacity demands. A 24-in. by 55-ft. conveyor below the first of these four units provides for blending of sizes as desired, and transfer to a bin.

Wash water is furnished to the plant from an open reservoir by a 2000 g.p.m. Allis-Chalmers 8- by 8-in. pump driven by a 150-hp. motor. The reservoir is fed by natural drainage and also supplied by a 600 g.p.m. Peerless pump from a 1400-ft. deep well. Wash water from the Whirlcone separator flows to two settling ponds from which it returns in part to the reservoir through seepage.

The plant was designed to produce 375 t.p.h. over two shifts of a 17- to 18-hr. day. About 10 percent of the deposit consists of No. 4 pea gravel, and the finished product is about evenly divided between sand and gravel. Truck shipments of approximately 1000 t.p.d. are weighed out over a Howe Weightograph, and the balance is loaded in railroad gondolas. Trackage at the plant site will accommodate 80 cars that are switched by a 45-ton Cummins diesel powered G-E yard locomotive. There are four tracks for carloading. Utility equipment on the property includes a K375 Link-Belt yard crane and a Caterpillar 112 road patrol.

An extensive safety program is carried on throughout the company. At this operation, under the direction of H. Fudge, plant superintendent, and W. Wonders, division superintendent of the operating department, the program includes the issuance and use of all safety equipment, plus regular monthly safety meetings. As a result of this program, at the time of our visit, the same crew had operated 617 days (partly at the old South Elgin plant) without a lost-time accident.

Texas Portland Cement Co. Begins Plant Construction

Kent B. Diehl, president of the Texas Portland Cement Company of Orange, Tex., reports that the firm has let a $330,000 contract to the Chandler-Borton Company, Hutchison, Kans., for the construction of four cement silos, a slurry tank, and a mixing tank. Work is scheduled to begin within a few weeks on the units of the firm's new facilities at Echo, Tex.

The 1,500 bbl.-per-day, $3,000,000 plant will occupy a 38-acre tract on a Southern Pacific Railroad siding. Seashell, gypsum, and clay will be utilized as the basic ingredients of high-grade portland cement. It is anticipated that production will begin in approximately nine months.

The company's proposed marketing area lies within a 150-mile radius of the plant, including Beaumont, Port Arthur, Baytown, Houston, Texas City, Galveston, Freeport, and to the north, Lufkin and Nacogdoches. The Louisiana area served includes Lake Charles, Lafayette, and Alexandria.

Hughes-Vertin Lime Facilities Acquired by Semon Lime Co.

The Semon Lime Company, Inc., a recently organized firm, has acquired the lime plant and quarry formerly owned and operated by the Hughes-Vertin Lime Company near Auburn, Calif.

New equipment has been installed, and productive capacity has been increased. The operation is located at Pilot Hill, about 15 miles from Auburn, the shipping point being at the railhead in Newcastle, Calif.

Officers of the company are the following: O. H. Semon, president; Eli Gorodezky, vice-president; and Hazel H. Semon, secretary-treasurer —all of Phoenix, Ariz. Herbert S. Dahlman, general manager and chief engineer, was for many years chief engineer of the Paul Lime Company at Paul Spur, Ariz., before joining the Semon Company's predecessor, Hughes-Vertin Lime Co.

Midwest Lithium Corporation To Use Piedmont, S.D., Plant

Midwest Lithium Corporation officials have announced that the first complete lithium processing plant in the Black Hills may be in operation by the first of the year. The company, incorporated for business at Hill City and Custer, S. D., plans to process lithium at the old U. S. Gypsum Company plant near Piedmont, S. D. Company directors include Amos Lingard, Glenn S. Bettus, R. M. Coldwell, M. F. Anderson, Elton Patterson, and Frank Mullin, all of Rapid City, S. D.

Lithium operations of the area are confined to mining and concentrating, and the ore is now shipped to Minnesota and New Jersey for processing. Midwest's plans call for remodeling the plant at Piedmont at a cost of about $100,000 and installing new machinery. Company officials expect to use ore from Midwest's mines and others in the area, and to process lithium compounds.

International Minerals Building $400,000 Mica Plant

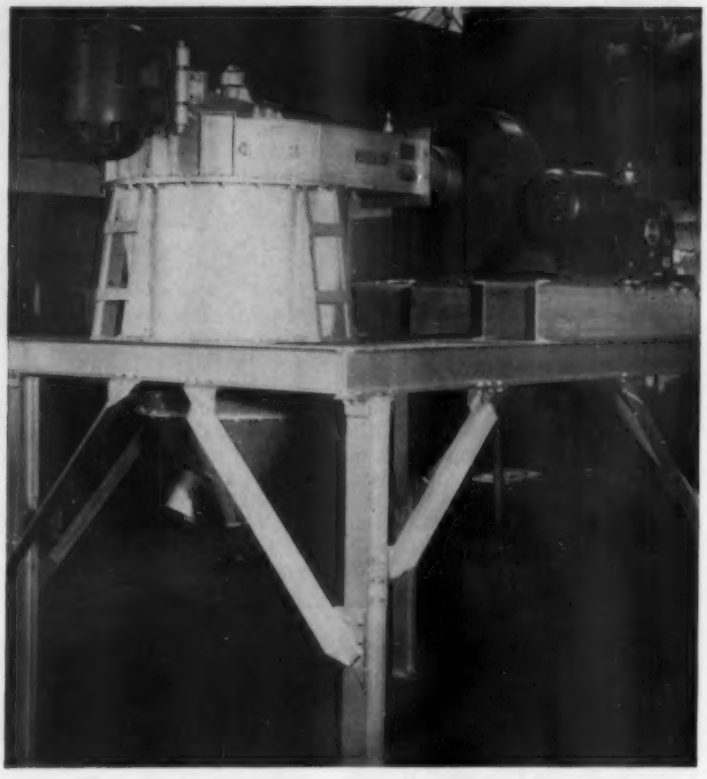
Construction of a mica plant has begun at Greeneville, Tenn., for the International Minerals & Chemical Corporation, according to an announcement issued by Louis Ware, president of the company. Purpose of the new facility is to reclaim mica from silt which has accumulated behind Davy Crockett Dam in Nolichucky Reservoir near Greeneville.

The plant is expected to cost about $400,000 and will be in production by next spring. It will be operated by the Industrial Minerals Division of International Minerals and Chemical. Initial capacity will be approximately 100 tons per day. The mica is expected to be of a high quality for specific uses, since it has been delaminated by movement and prolonged immersion. Reserves of raw material are reported to be large.

Kaiser Steel Corporation has announced it will pay more than $1,000,000 for a 10-sq.-mile area of land it is purchasing in San Bernardino County, Calif., which contains extensive limestone deposits. The tract will supply limestone for the new cement plant the firm has built at Fontana, Calif.

NEW TYPE STURTEVANT AIR SEPARATOR

Recovers Fines in Micron Ranges



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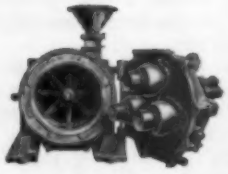

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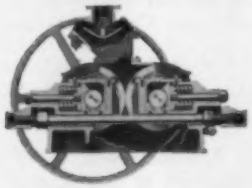

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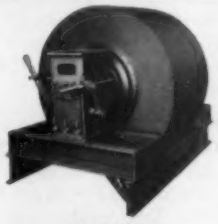

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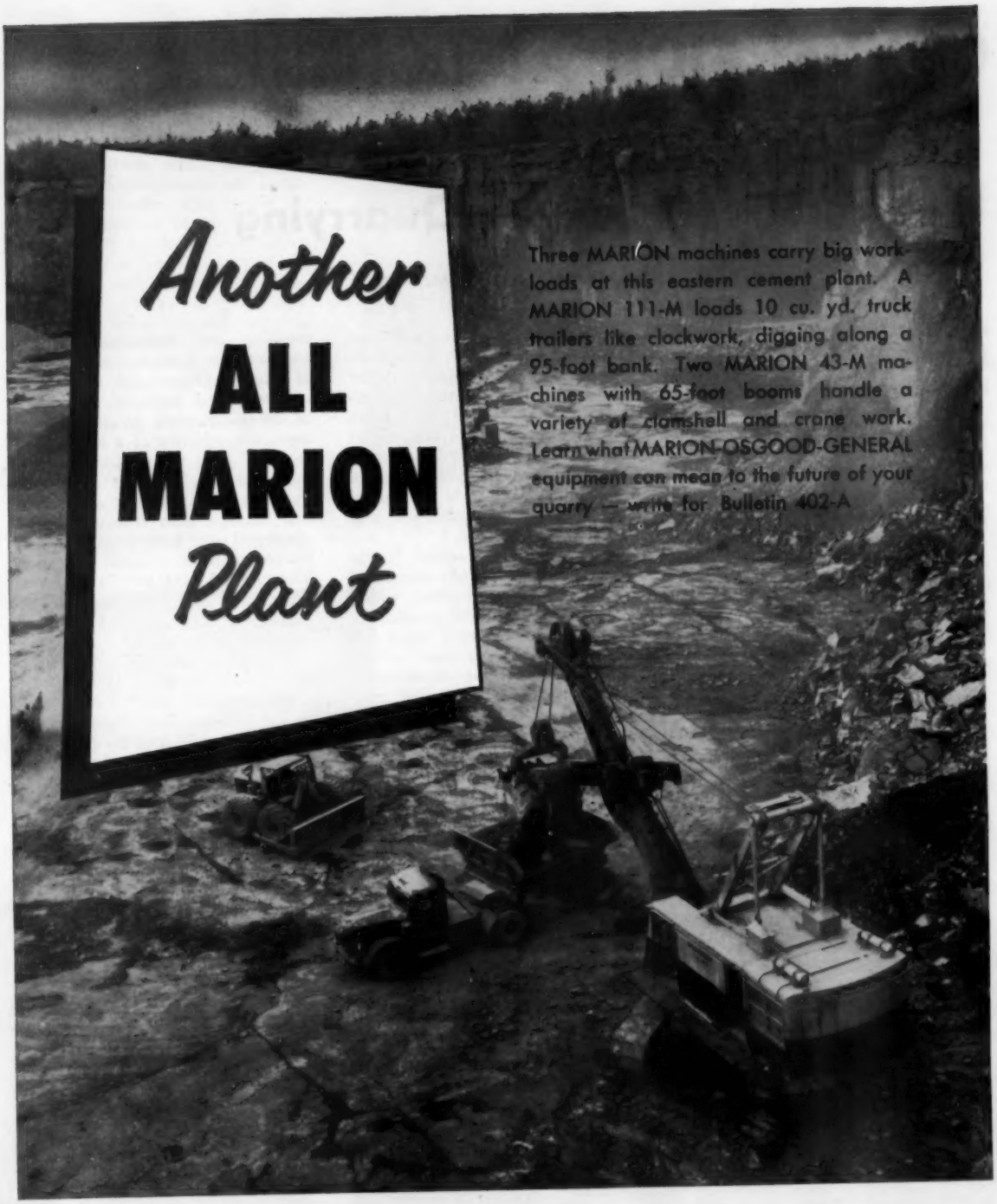
Another
ALL
MARION
Plant
Three MARION machines carry big work loads at this eastern cement plant. A MARION 111-M loads 10 cu. yd. truck trailers like clockwork, digging along a 95-foot bank. Two MARION 43-M machines with 65-foot booms handle a variety of clamshell and crane work. Learn what MARION-OSGOOD-GENERAL equipment can mean to the future of your quarry — write for Bulletin 402-A

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CONVERSION AT SUPERIOR—

Marquette Operation Shifted From Mining to Open Quarrying

By WALTER E. TRAUFFER

another ON THE SPOT report

WITH the acquisition of the Superior, Ohio, plant of the New York Coal Sales Company in 1954 the Marquette Cement Manufacturing Company extended its operations into a new and active market. Southeastern Ohio and the adjacent sections of Kentucky and West Virginia are undergoing an industrial boom largely motivated by construction of the vast atomic energy plant near Portmouth, Ohio. With chemical plants moving in and others expanding, the area is becoming known as the Ruhr Valley of America.

With this new plant Marquette now has seven operations covering the entire South and Middlewest, ranging from Rockmart, Ga., in the Southeast and Brandon, Miss., in the Southwest, to Des Moines, Iowa in the Northwest and Superior, Ohio, in the Northeast. From the nucleus of its original plants at Oglesby, Ill., and Cape Girardeau, Mo.—and the Des Moines plant added in 1940—Marquette has acquired five plants since 1946 for a present total productive capacity of 13,600,000 bbl. annually. (Construction of facilities for producing an additional 3,000,000 bbl. of annual capacity has been authorized and will be under way soon.)

As each plant was added, it was improved and expanded—except, of course the Mississippi plant, which was built new from the ground up.

The same procedure is being followed at the Superior plant, which was obsolete in some departments when it was taken over. The most interesting of these improvements, and the one with which this article is chiefly concerned, was the change from underground mining to open quarrying late in 1954. The new crushing and conveying facilities completed in January, 1955, are also of interest. Other work in progress or completed includes remodeling of the raw-material grinding department, the addition of a direct-firing coal mill, and the modernization of the packhouse. The adoption of open quarrying and the replacement of rail haulage with trucks and belt conveyors were both important steps toward more economical operation. The original 1,000,000-bbl. per year capacity of this plant has been increased to 1,250,000 bbl. by these improvements.

This plant was originally built in 1907 by the Superior Portland Cement Company. In 1915 it was sold to the Wellston Iron Furnace Company, which sold it to the New York Coal Sales Co. in 1931.

The big problem at this plant is the deposit, which had always been

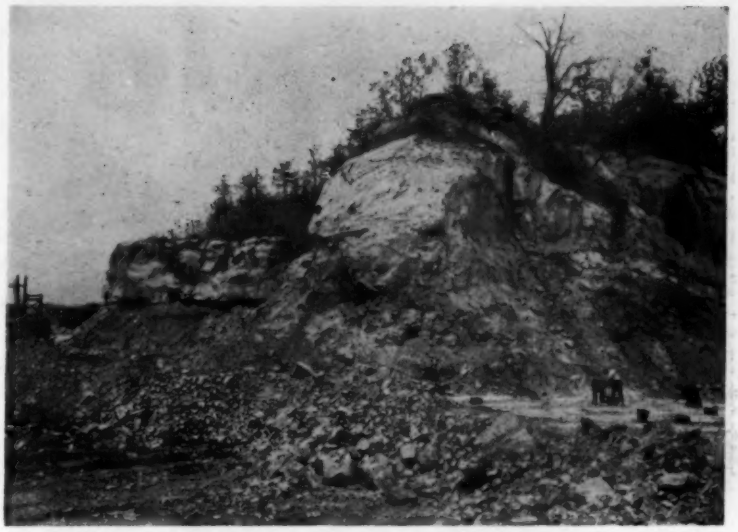
Looking from the crushing and screening building of Marquette's operation at Superior toward the cement plant, one sees this view. The two conveyors in the foreground return oversize from the screen to the secondary crusher.

The 6- cu. yd. walking dragline with its 140-ft. boom overcasting overburden past the edge of the deposit.

worked by underground room-and-pillar mining—in late years at an almost prohibitive cost. The first step undertaken by Marquette was to convert to open quarrying, and even this, as we shall explain, is done under conditions which might discourage a less progressive and imaginative organization. The answer lies in the application of modern mass earth-moving methods with which Marquette has had long experience at Oglesby* and elsewhere. Actually, as much as 135 ft. of earth, clay, and rock is being removed to get at 6 to 7 ft. of limestone.

The deposit is a 6- to 7-ft. stratum of Vanport limestone, named after Vanport, Pa., which is also worked commercially in northeastern Ohio. This is an excellent limestone for cement manufacture as it has a uniform high calcium-low magnesian content. The terrain consists of hills

*See PIT AND QUARRY, October, 1954, pp. 96, *Marquette Strips Heavy Overburden at Oglesby*

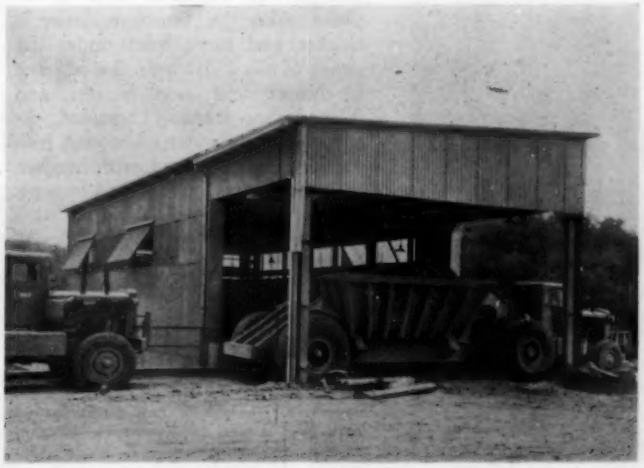


This view shows the shallowness of the deposit and the type of overburden to be removed. At the right blastholes are being loaded.

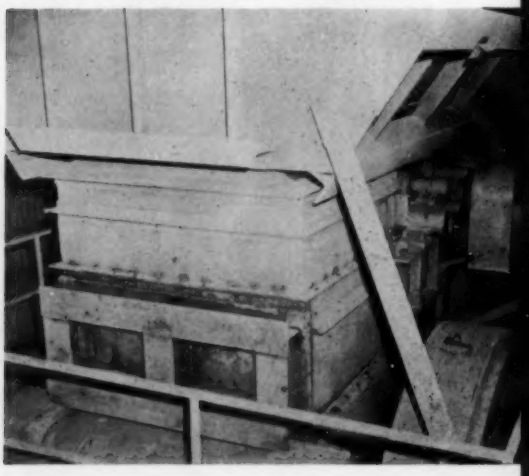
Left: The fully-enclosed scalping screen, showing the connection to the dust collector above.

Right: The control board from which the entire crushing and screening department is operated.

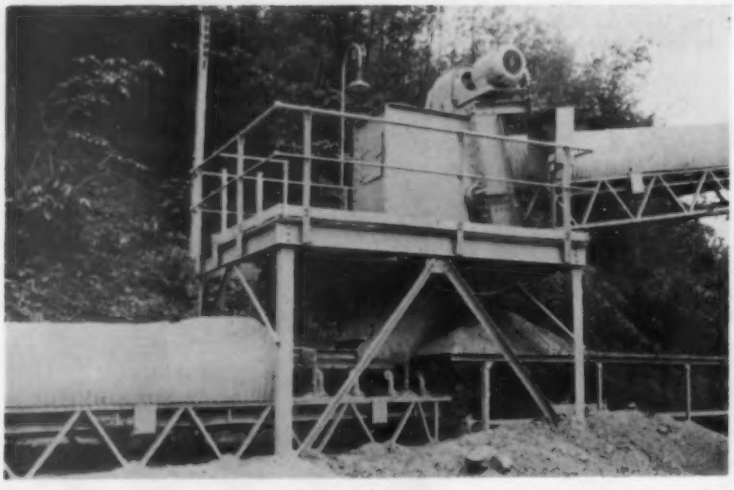
Below: Tractor-trailer units discharging their 30-ton loads to the primary crusher.



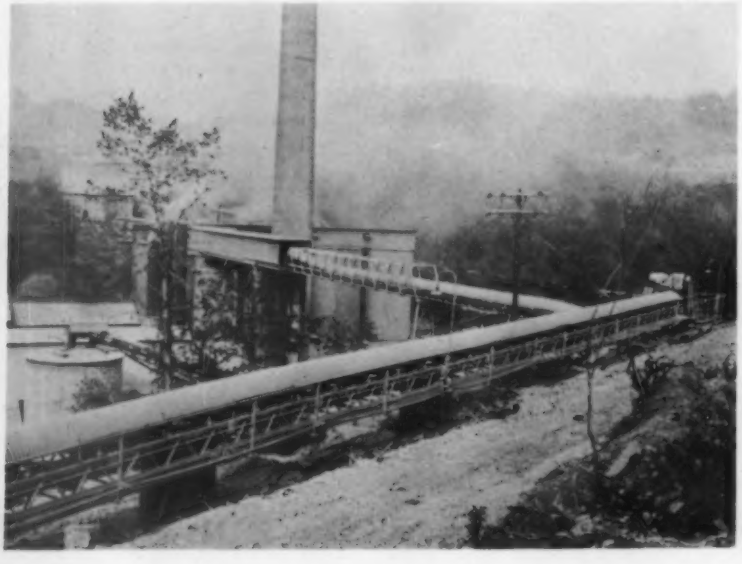
Below: The 28- by 60-in. pan feeder which feeds the 60- by 36-in. primary crusher.



Left: The crushing and screening department, with the surge storage silo at the right. Note the chute which by-passes the shale, sandstone, and chips and goes direct to the cement plant conveyor system.



The transfer point between conveyors No. 5 and 6 in the conveyor system to the cement plant.



Left: Conveyor No. 6 discharging to Conveyor No. 7, which in turn discharges direct, via lateral conveyors, to 14 raw-material storage silos.

which have been eroded in many places below the level of the limestone. For many years these hills were mined, leaving them honeycombed. A 2-ft. layer of coal above the limestone was worked at the same time up to 1940, when most of it had been worked out. Some coal also occurs at a higher elevation, but it is not of commercial value. There was also some iron ore above the limestone, but the best of this was mined out prior to 1905.

The top of the limestone deposit is at about 800 ft. above sea level. At one location there is limestone from 801 ft. to 808 ft., shale to 820 ft., clay to 831 ft., coal to 833 ft., sandstone to 885 ft. and a mixture of clay and sandstone to the top of the hill at 910 ft.—for a total of 102 ft. of overburden. In another location there is 7 ft. of limestone up to 800-ft. elevation, clay to 819 ft., coal to 821 ft., sandstone to 870 ft., clay to 880 ft., sandstone to 890 ft., and dirt to 910 ft. It is apparent that the stripping problem is complicated not only by the variety and types of materials to be removed, but also by the variation found from hill to hill. Under the limestone there is shale, but not far away good coal occurs under it.

At a glance it might seem that it would be most economical to quarry only the limestone around the edges of the hills in order to avoid the heaviest of the overburden. Because of the hilly terrain, however, only a small percentage of the property actually contains limestone, and this procedure would rapidly work out the property and increase the length of haul to the plant. Also the limestone layer is thicker and more solid under the peaks of the hills; near the edges it is thinner and more broken, and it has clay seams. Therefore, although several outcrops around hills are now being worked, with burdens of 70 to 90 ft., it is planned to work right through the hills as soon as a sufficient area has been developed.

The development procedure now being followed is to have a stripping shovel—a Lima 1201 unit with a 40-ft. boom and a 2½-cu. yd. dipper—

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work at a level from 10 to 30 ft. above the limestone. This works a ledge around the side of the hill, overcasting the overburden as it goes. The ledge serves as a floor for the stripping dragline and for a McCarthy auger drill which sinks blast holes through the clay and sandstone, etc., to the surface of the deposit. Blasting is done with 30 percent dynamite to loosen the material so that it can be removed down to the limestone by the Marion 7200 walking dragline. The latter has a 140-ft. boom, a 6-cu. yd. dragline bucket, and is powered by a 415-hp. Fairbanks-Morse diesel engine. The dirt, clay, broken sandstone, etc., is overcast over the edge of the limestone into the ravines between the hills. Later it will be overcast into the worked-out section of the quarry. The method to be used for removing the deeper overburden in the centers of the hills has not been definitely decided upon, but it will be done with draglines, wheeled scrapers, or a combination of the two.

Blastholes are drilled in the 7-ft. layer of limestone by Ingersoll-Rand M13233 Drillmasters — tractors on which two jackhammers are mounted. Holes are drilled in two rows, with close spacing for breakage. Dupont 60 percent gelatin and electric delay caps are used. The badly broken rock along the edges of the hills makes it necessary to vary drilling and shooting procedures to fit conditions.

Loading of the stone is done by a 3-cu. yd. P&H diesel shovel into three Caterpillar DW20 diesel tractors, pulling Athey PD20 side-dump trailer wagons which haul 30-ton loads, and a Euclid diesel end-dump truck which hauls a 22-ton load. Two other tractor-trailer units are kept in reserve. The haul to the plant is about 2½ miles at the present time. A wide, smooth and fairly level road is maintained to permit operation of the haulage units at their most economical speeds. The trucks replaced the electric cars which formerly hauled stone from the mine to the old crushing department near the cement plant.

The Lima stripping shovel is also employed at intervals for digging and loading shale and sandstone, which are also used in the raw mix for the plant. The same processing and conveying systems handle these materials for short periods.

At the primary crusher the haulage units dump their loads—the DW20's from one side and the Euclid from its end—into a hopper over the 28- by 60-in. "Oro" pan feeder. The latter discharges the stone to the 60- by 36-in. McLanahan & Stone single-slugger roll crusher, which reduces it to 6-in. and under. A 48-in. by 12-ft. Telsmith apron feeder discharges this rock onto a 36-in. by 66-ft. belt conveyor, which carries the rock into a Pennsylvania (Bath Iron Works) CF13-44 Impactor for reduction to 1½ in. and under. A 48-in. by 12-ft. pan conveyor feeds this material onto a 5- by 11½-ft. single-deck screen fitted with 1½-in. wire cloth. This screen and other equipment in this department is connected to a dust collector.

Oversize rock from the screen (3- to 1½-in.) is conveyed by a series of two 24-in. belt conveyors, in a scissors arrangement, back to the Impactor, forming a closed circuit. These conveyors are each 24 in. wide and 84 ft. long.

Material through the single deck of this screen (1½ in. minus) is discharged on a 24-in. by 126-ft. belt conveyor (No. 4), which is the first of the series of four conveyors carrying the stone 2,500 ft. to the main plant. This conveyor discharges the cement raw rock into a suge silo with a live storage capacity of 1,000 tons. This silo is 30 ft. in interior diameter by 30½ ft. high and has a self-cleaning conical bottom 13 ft. deep. It is built of Marietta concrete staves with steel reinforcing rings, and has concrete foundations.

When shale, sandstone, or clean limestone for chips are being processed, the material goes through the above process, but it by-passes the surge bin direct to the conveyor system to the plant. By means of a split chute this material is discharged from conveyor No. 4 to a 24-in. by 19-ft. by-pass conveyor (No. 4½). The latter discharges through a stepped chute onto conveyor No. 5 to the plant. Because the faults in the limestone include considerable clay and sandstone, it is necessary to run shale only ½ day per week and sandstone ½ day every second week. Chips are run about one day every two weeks, whenever clean stone is encountered.

A 48-in. by 12-ft. Telsmith apron feeder discharges the rock from the surge silo on conveyor No. 5, which is 24 in. wide and 867 ft. long. This conveyor is nearly horizontal and discharges on conveyor No. 6—24 in. by 1,080 ft.—which is nearly horizontal for 500 ft. of its length but in its last 580 ft. climbs a hill, rising 60 ft. to above the level of the raw-material storage silos. Conveyor No. 7—24-in. by 300-ft.—is nearly level and carries the rock to the top of the silo structure. There are 14 reinforced concrete silos of various capacities, six of which are used for limestone, four for shale, one for sand, and two for limestone chips used in the manufacture of masonry cement. Together these silos have sufficient capacity for three days' operation of the plant.

Conveyor No. 7 is equipped with a Hewitt-Robins traveling tripper which discharges direct into one silo for chips, one silo for sandstone, three silos for shale, and three silos for limestone. It also feeds to an 18-in. by 24-ft. conveyor to a second silo for chips, an 18-in. by 24-ft. conveyor to a third silo for shale, and an 18-in. by 129-ft. conveyor to three additional silos for limestone. Hewitt-Robins conveyors and belts are used throughout this entire new system, which has a capacity of 350 t.p.h. All outside conveyors are equipped with sheet metal enclosures.

Intermountain Chemical Corp. To Raise Soda Ash Output

C. A. Romano, resident manager of the Intermountain Chemical Corporation's Westvaco mine near Rock Springs, Wyo., has announced that the firm will undertake a $325,000 modernization program there. The improvements will boost soda ash production from 300,000 to 325,000 tons per year. Completion of the work is scheduled for January 1, 1956.

This modernization project brings to $1,575,800 the cost of construction now under way at the mine. A contract for $1,250,000 was let recently for the sinking of a third shaft.

The Indian Government has placed an order with a West German firm for an improved type of cement plant with an installed capacity of about 100,000 tons annually, at an estimated cost of $357,000. Other items for the proposed factory will be manufactured locally. The plant will manufacture cement by the dry process.

United States Gypsum Company recently announced plans for greatly increased gypsum board production including gypsum lath, wallboard, and sheathing at its Plaster City, Calif., location. The approved addition is said to make this plant the world's largest gypsum products manufacturing unit.

One of approximately 1200 on the Minnesota Iron Ranges, this 34-ton "Euc" is loaded by a 5 cu. yd. shovel at a large open pit operation. Rear-Dump models are available with semi-rigid or spring mounted axles, Allison Torqmatic drives and transmissions, or conventional 5 and 10 speed transmissions.

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This Bottom-Dump "Euc" is being loaded with 17 cu. yds. of sand and gravel from an overhead hopper for haul to the washing plant. Owner is Interstate Sand and Gravel of Covington, Ohio.

Ideal Cement Co. of Portland, Colorado uses 22-ton Rear-Dumps with quarry bodies to haul stone from the face to the crusher. Top speed of this Model 36 TD, with full payload, is 32.5 m.p.h. Spring mounted drive axle and Allison Torqmatic drive and transmission are important factors in stepping up production and profits at this quarry operation.

Euclid Twin-Power Scraper stripping overburden at a large gypsum quarry in Iowa. Powered by two 190 or 200 h.p. engines with torque converters and semi-automatic transmissions, this "Euc" self loads, has a struck capacity of 18 cu. yds. and travels up to 30 m.p.h. with full payload.

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Flexibility Plus At West Lake Quarry

Standardized components give stationary limestone plant ability to turn out many grades of crushed rock easily

By RAY DAY

STANDARD crushing and screening equipment arranged to deliver the utmost in flexibility have allowed West Lake Quarry & Materials Company of St. Louis, Mo., to meet a demanding 1,600-ton-per-day market with ease. Crushed limestone aggregates for both portland cement concrete and plant-mixed asphalt concrete are being turned out in some cases simultaneously at the West Lake Quarry setup, at the junction of Taussig Road and U. S. 40, between St. Louis and St. Charles, Mo.

According to plant supervisors, full credit for meeting a changing market goes to the plant modernization program instituted several years ago, in which standardized Pioneer crushing, screening, and conveyor equipment was installed to deliver the utmost in gradation flexibility. These units, augmented by swing chutes and temporary storage bins, have allowed materials to be mixed or blended to meet practically any specification governed by contracting agencies in the immediate St. Louis area.

Since West Lake Quarry began operations, a pit 250 ft. deep has

Wagon drillers were busy in the forground of this overall shot of West Lake Quarry near St. Louis, which shows the plant layout.

been exposed over approximately 20 acres. The crushing-screening plant and a ready-mix concrete batching and mixing plant have been established along the west property line. A business office, administrative headquarters, and repair shops also are located along the west boundary.

West Lake Quarry's expanding operations are opening up new ground to the east as work progresses, and a beautifully outlined system of berms and benches has been developed so that raw pit operations can be worked at optimum capacity. The prime consideration in the establishment of berms and benches, of course, is the establishment of banks of proper height for shovel loading, with relatively easy grades between berms for the establishment of haul roads.

West Lake Quarry is located in a deposit of St. Louis limestone. The rock is a hard layered sedimentary formation, clean and relatively sound. Containing no alkali, it has excellent concrete properties. Approximately 35 percent of the output of West Lake Quarry goes into the manufacture of concrete, 35 percent becomes crushed rock for roads and driveways, 15 percent goes into hot-mix asphalt manufacture, about 5 percent into the manufacture of concrete blocks, and the remaining fraction to the construction of driveways.

Production is on a year-round basis. There is considerable stockpiling of material during the slack time of the year, which tends to help out a great deal during periods of peak demand.

Preliminary drilling and break-up of the raw pit-run material at West Lake starts with 24-ft. wagon drill holes of 2½-in. diameter, which are sunk on 5-ft. staggered centers by a pair of wagon drills. These holes then are column-loaded with special gelatin powder, and the broken rock chunks are scooped up by a 2½-cu. yd. power shovel, loading a fleet of four 12-cu. yd. bottom-dump wagons.

Broken material is taken by the wagons directly over a feeder trap, where in a stationary position they discharge it to a Pioneer 30- by 42-in. jaw crusher, driven by a diesel engine and fed by a Pioneer feeder. The entire input of raw material is routed through this crusher.

Coming out of the jaw crusher, the material passes over a Pioneer 4- by 10-ft. scalping screen equipped with a 3-in. deck. A large percentage of the material, of course, passes directly through this screen, but the fraction still retained on the scalper passes through a hammermill arranged in closed circuit with this screen deck. Throughs from the hammermill then join the material passing through the scalping screen.

The first step in the standardized sizing process consists of routing the material to a pair of 4- by 12-ft. Pioneer screens, one a 4-deck model and the other is a 3-deck. The 4-deck screen is equipped with 2⅞-in. wire mesh, 1½-in., 1-in., and 1 in. What goes through the lower 1-in. deck passes to the 3-deck screen, which has 1-, ⅜-, and ⅛-in. mesh. This screen, operating at high capacity, quickly sizes the finer fragments, and in the same manner as on the previous screen, Pioneer conveyors carry the material to storage bins.

Material retained on the 2⅞-in. mesh screen is especially well suited for reduction to an approximate 1-in. minus fraction by a Pioneer 40- by

(*Continued on page* 88.)

Above: Perched high on a ledge near the quarry top, this jaw crusher is the first unit in the line to work on the material.

Left: To add extreme flexibility in the crushing components of the plant, this roll crusher was installed in the line.

Right: A large percentage of the rock crushed and sized by the units in West Lake Quarry ends up in this concrete plant without touching the ground in transit.

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No matter where your contracts take you, you'll find GM Diesel distributors ready to supply fast service and quick delivery of low-cost factory parts. Check your local distributor today for full details on dependable, low-cost Diesel power for your equipment, or write direct for more information.

PURCHASED 23 GM DIESELS SINCE 1947

This LeTourneau-Westinghouse Tournapull is part of an earth-moving fleet used by the Lone Star Steel Company of Lone Star, Texas. The Company, one of the largest producers of steel in the Southwest, has been a consistent user of General Motors 2-cycle Diesel engines in several different kinds of earth-moving, construction and mining equipment for better than seven years.

GM
GENERAL MOTORS
DIESEL POWER

SAVING $170.00 A MONTH IN FUEL ALONE

United Construction Company cut fuel costs over 60% and reduced maintenance costs when they *switched* from gasoline to GM Diesel power on their Moretrench pumps. The GM Diesels worked 24 hours a day, 7 days a week—eliminated stops formerly required to pull and service spark plugs every three days and to replace them every three weeks.

13,000 HOURS—NO REPAIRS

General Contractor A. H. Famularo bought this GM Diesel-powered Northwest 25 Crane in April 1947. In 13,000 hours he never had an injector out, never touched the head or pan. He burns 16 gallons of low-cost Diesel fuel in 8 hours—specified GM Diesel power "because it was economical . . . and has proved to be reliable."

25% MORE WORK; FUEL COSTS ⅓ LESS

Killough Construction Company has *standardized* on GM Diesel power for their portable rock crushing plant in Kansas. The firm uses six GM Diesels to run a hammer mill, operate conveyors and screens, a primary crusher and two shovels. One shovel, converted from gasoline to GM Diesel power, now does 25% more work on one-third less fuel cost.

"WONDERFUL PERFORMER"

This GM Diesel-powered scraper hauled nine yards every four minutes on a recent job for the R. J. Boe Construction Company. Contractor Russell Boe likes the "wonderful acceleration and trouble-free performance GM Diesel power gives me." He says, "All you need to do is keep water, oil and clean fuel in that GM Diesel and you'll get a good day's work out of it."

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RECIPROCATING PLATE FEEDER

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ROCKMASTER CRUSHER

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McLANAHAN & STONE
CORPORATION
PIT, MINE AND QUARRY EQUIPMENT HEADQUARTERS SINCE 1835
Hollidaysburg, Pennsylvania

West Lake Quarry

(*From page* 85.)

22-in. roll crusher, arranged in closed circuit with the screen deck by means of an enclosed bucket-type elevator. The control of the finished product has an unusual degree of flexibility here because of the ease of adjustment of this crusher.

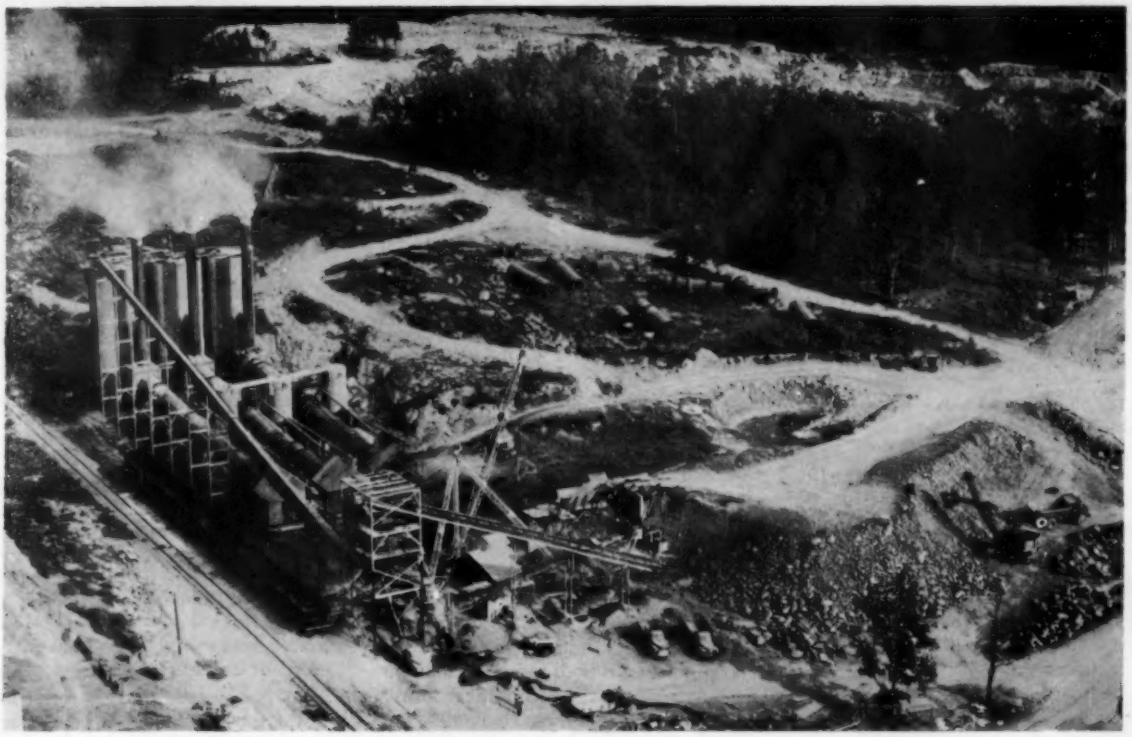
The plant has an integral system of temporary storage compartments which are tied together, in some cases by swing spouts, so that an unusual degree of blending is possible. This feature allows the plant manager to achieve any degree of mixing of sizes to meet any specification in that area.

Another feature of the plant is its ability to turn out well-graded concrete aggregates, and to move these aggregates directly from their point of manufacture into the concrete plant without touching the ground. The plant has storage facilities, so that crushed material can be hauled from bins or from stockpiles, depending on the type of the material and the season of the year.

Maintenance of the plant components has been negligible, partly due to the intelligent layout of the plant which featured such extreme flexibility. By an arrangement permitting control of each fraction of material with recrushing in some cases, the plant has all the flexibility needed to turn out a finished product, while making things as easy as possible on the plant components.

At present the market for material is approximately 1,600 tons per day. By working an eight-hour day at an average production of 200 t.p.h., the operators are able to satisfy that demand in a normal five-day week. However, St. Louis and its environs are expanding rapidly as new homes and businesses are being built, a trend which creates a demand for concrete and for additional streets and roads. It is a safe bet that West Lake Quarry has the flexibility and reserve capacity to step up its production at will when new demands are imposed by the city's growth.

Work has begun on the construction of the plant of the Bonner Springs Sand and Materials Company, Bonner Springs, Kans. Several grades of sand are to be offered when the plant has been completed. Dewey Schlup, president of the new firm, announced that the $50,000 plant will be ready within three months.



Air view of Carolina Solite's plant at Aquadale, N.C., showing the three rotary kilns now in operation.

Carolina Solite's Aggregate Plant Expanded After 1-Year Operation

Same crushing and screening circuit used for raw and finished materials

By WALTER E. TRAUFFER

another ON THE SPOT report

THE rapidly-growing demand for lightweight aggregates is evident from the large number of such plants springing up in various parts of the country. That these plants have only partly filled the need for this product is evident from the large number of facilities which have had to be enlarged once or even several times soon after they were built. An example is the new plant of the Carolina Solite Corporation near Aquadale, N. C. This $1,000,000 lightweight aggregate plant went into full operation early in 1954. It then had two 7- and 8- by 135-ft. rebuilt Vulcan rotary kilns, and three used 8- by 125-ft. kilns, were on hand for future plant expansion. The need from more capacity quickly became apparent, and one of these reserve kilns (with an additional 10 ft. of length) and its related equipment went into operation in June, 1955.

Carolina Solite is a subsidiary of the Southern Lightweight Aggregate Corporation of Richmond, Va., which operates the first Solite controlled lightweight aggregate plant at Bremo Bluffs, Va. This plant was put in operation late in 1948 and

The 1½-cu. yd. shovel in the slate quarry, loading a truck for haulage to the plant.

Here a truck is dumping slate to the primary crusher feeder. The stiffleg derrick (left) feeds kiln product to the same circuit.

was described in the January, 1949, issue of PIT AND QUARRY, pp. 129-131, 134. Originally this plant had two rotary kilns. Later four more kilns were added. The number and size of its kilns makes this the largest plant of its kind east of the Mississippi River and perhaps the largest in this country.

The parent company, Southern Lightweight Aggregate, has for many years been prospecting for suitable deposits in various sections of the country. The site of the new plant 40 miles east of Charlotte, N. C., is the result of seven years of preliminary research in that state to locate a suitable deposit with the proper type of material, shipping facilities, proximity to markets, etc. The state geological department assisted in locating this deposit, and extensive soil and core drill tests were made to prove it. The tract of 450 acres which has been acquired contains enough material for many years.

The plant was designed by the company's engineering and operating staff from experience gained at the original Bremo Bluff plant. Features of its design include the use of the same crushing and screening equipment for both raw and finished materials and the electronic control of the kilns and their coal mills.

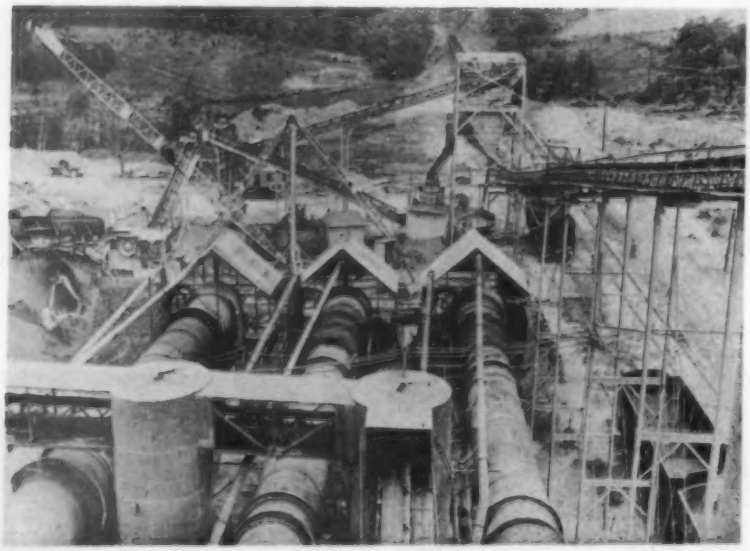
Aquadale raw material is very similar to that at the Bremo Bluff operation. It is classified as a Monroe slate and differs from most slates in that it is stratified, rather than laminated. The strata vary from 27 to 48 in. in thickness. Near the surface of the deposit the strata have clean separations but deeper down they are bonded, and the material tends to break blocky. Tests to a depth of 180 ft. show a Los Angeles hardness of 18 to 20. The analysis of this material varies somewhat in different parts of the deposit. The analysis varies from 61 to 67 percent silica, 14 to 22 percent alumina, 4 to 10 percent Fe_2O and Na_2O, less than 1 percent sulphur and less than 1 percent moisture.

The quarry site was selected so that there would be natural drainage to a depth of 125 ft. Overburden, consisting of dirt and some soft rock, ranges from 3 to 15 ft. in depth, with an average of about 8 ft. This material is removed when possible by the quarry shovel and trucks.

Quarry development is by 20-ft. benches from the top of the hill downward, each bench opening up about 5 acres.

Drilling is being done with an Ingersoll-Rand wagon drill using 2¼-in. steel 24 ft. long. Air is supplied by an Ingersoll-Rand 315-c.f.m. diesel portable compressor. Holes are spaced 6½ ft. in a circular pattern to give better breakage in opening up a bench. Shots are made 4 rows deep on a 150-ft. face, using 5-10-15 delays and 60 percent gelatin dynamite. In developing the quarry, the yield has been only 2 tons per pound, but much better results will be obtained later. Secondary breakage was originally done with jackhammers, but most of it is now done with a 2,000-lb. Eagle Iron Works dropball. A 1-cu. yd. Northwest crane with a 50-ft. boom is used, and the ball is hooked up with a clevis and tagline arrangement.

The stone is loaded by a 1½-cu. yd. Northwest shovel with a Murphy diesel engine. G.M.C. and Euclid dump trucks haul the stone about 800 ft. to the plant. Here it is dumped onto a 4- by 24-ft. Universal Engineering apron feeder with steel hop-



This view of the Carolina Solite Company's lightweight aggregates plant near Aquadale, N.C., shows the three kilns, with crushers and screens in the background.

per sides. The feeder is driven by a 5-hp. gearhead electric motor which is pushbutton-controlled. Eventually it is expected that conveyors to the plant will be used, with the trucks feeding to the conveyor system.

The feeder discharges the stone into the 30- by 42-in. Universal jaw primary crusher which is V-belt-driven by a 150-hp. G.E. motor. The minus 4-in. product is discharged on a 30-in. by 115-ft. conveyor to a 30-in. by 185-ft. conveyor which feeds on one of two 5- by 12-ft. Screen Equipment Co. Seco 2-deck screens. This has 1½- and 2-in. cloth on the top deck; the bottom deck is not being used. The material over the screen is chuted to a 4-ft. Symons shorthead cone crusher which reduces to minus 2-in. A 24-in. by 97-ft. belt conveyor returns this material to the conveyor feeding the screen, forming a closed circuit.

The material through the screen is chuted into the three compartments of a steel bin, all of which discharge on a 24-in. by 276-ft. Barber-Greene conveyor to the top of one of the two storage silos. A 24-in. by 35-ft. cross conveyor carries the material to the second silo. These silos are 22 ft. in diameter by 67 ft. high and are built of Solite concrete staves made by the Brandon Silo Company of Richmond, Va., which also erected the silos. Each has a live storage capacity of 1,000 tons.

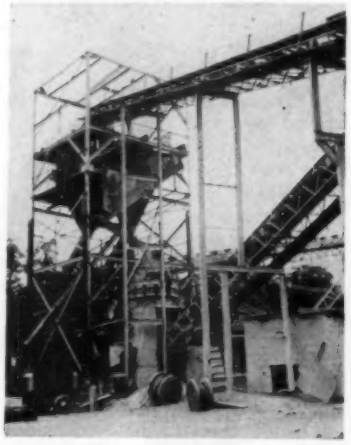
Kiln feed material in these silos averages about 50 percent ½- to 1½-in. and 50 percent ½-in. minus. It is discharged through gravity-type gates to belt feeders, and bucket elevators feed directly into the kilns through breeching. Uniform feed is achieved by driving the feeders through chains from the kilns. Feeler levers on the kiln feed belts signal the kiln operator if the flow stops, so that he can make the necessary flame adjustments. The two original 7- and 8- by 135-ft. kilns are driven by 40-hp. G.E. totally-enclosed, fan-cooled slip-ring variable-speed motors through Link-Belt herringbone reducers and gears. The kilns are being operated at a speed of one revolution in 1½ min., but the range is 1 revolution in 1 to 2 minutes. The 8- by 135-ft. kiln is driven by identical equipment.

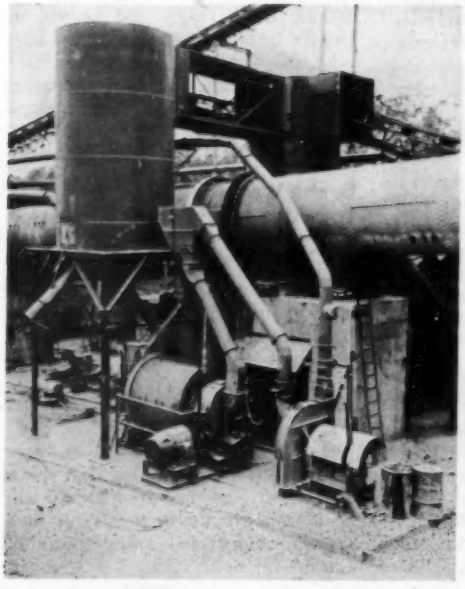
The kilns are lined with Solite portland cement concrete poured in place, except for 25 ft. in the hot zone, where Harbison-Walker refractory is used. Solite concrete is also used in the firing hood, breeching, etc. Maximum temperature in the kilns is about 2,400 deg. F. Each of the three kilns is fired with pulverized coal by a Kennedy-Van Saun 5- by 6-ft. air-swept ball mill.

Coal is received in open-top hopper cars, and a Farquhar unloader feeds it to a bucket elevator, which raises it to a third 22-ft. dia. by 67-ft. silo. This silo has a live storage capacity of 600 tons. Belt conveyors feed the coal to 30-ton mill feed tanks, from which electrically-controlled disc feeders discharge to the mills. Hot air for drying the coal is brought through ducts from the kiln hoods and is drawn through the mills and a series of tempering valves to a fan and to the dual burner pipes. In closed circuit with each coal mill is a vane-type classifier which returns rejects to the front end of the mill. Each ball mill is equipped with a Kennedy-Van Saun constant-level control at its intake. This electronic device connects with the coal feeder to the mill, varying the feed as necessary.

The coal is a high-volatile 38-plus nut slack of 13,800 to 14,000 B.t.u. with low ash content. The maximum burning temperature is about 2,400 deg. F. Burning control is visual.

The kilns discharge their product into a large open cooling pit, where it air-cools somewhat before it is removed. Reclaiming is done with a 35-ton American Hoist stiff-leg derrick with a 3-drum Clyde hoist and an 80-ft. steel boom handling a 2-cu. yd. Erie clamshell bucket. This unit rehandles to piles of about 75-car

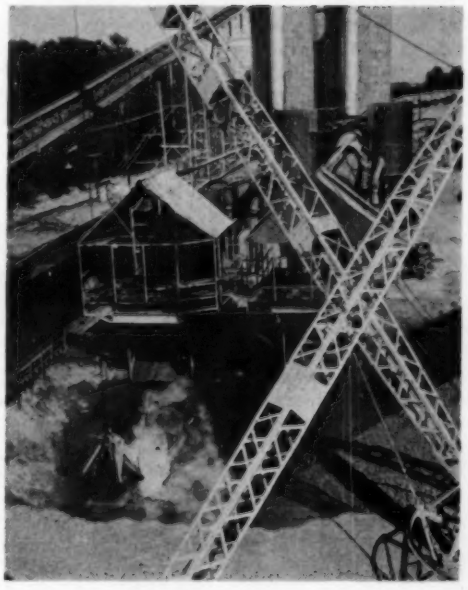




Above, right: The two sizing screens, with the cone secondary crusher below.

Left: The air-swept ball mill firing one of the kilns, with the coal conveyor and feed bin above.

Right: The kilns discharge into this cooling pit, from which a derrick rehandles the materials to the cooling piles and then to the crushing and screening circuit.



This view of the plant, taken before the third kiln was installed, shows the entire operation, including the coal and kiln feed silos at the right.

capacity, enough to give a 2- to 3-day cooling period before the material is processed.

This derrick also reclaims the cooled material from the storage piles to the same crushing and screening circuit used for the raw material. The length of the feeder—24 ft.—makes it possible to take care of almost any radius at which the crane boom might be working. The crushed material follows the same flow as the raw material over two conveyors to the Seco screen, which in this case has ¾- and ⅜-in. cloth on its top and bottom decks, respectively.

Oversize goes to the Symons cone crusher, which has its opening changed to 5/16 in. The second 5- by 12-ft. Seco 2-deck screen alongside the first can be used for quick changing of sizes. While one screen is in use, the other is changed for the next size to be made, with a considerable saving of down time.

Both screens can also be used at the same time to produce four sizes of Solite simultaneously. These are usually 0 to ⅜ in. for concrete blocks, ¼ to ¾ in. for structural concrete, ¼ to ⅜ in. for roofing, and minus ⅛ in. sand. These finished products range in weight from 75 lb. per cu. ft. for the coarsest sizes to 65 lb. for the sand. All sizes are chuted either direct to cars for shipment or into trucks which haul to stockpiles. An effort is made to keep up about 5,000 tons of Solite in storage, so that any normal demands can be met.

Electric power is purchased and is reduced to 440 and 110 v. for all plant uses. All control equipment is located in a small concrete building near the kilns. A safety feature is the use of low voltage (110 v.) starting for the motors which use 440 v. current at operating speeds. Any shorts during starting are thus less likely to cause injury. No fuses are used in the plant; circuit breakers are used throughout. All points of danger have lockouts at the switches. Air filters and a fan ventilate the control building, keeping it cool and dustless.

Carolina Solite's sales office is in Charlotte, N. C., and is represented in that location by Charles B. Laws. R. F. Gibson is superintendent of the plant at Aquadale, and J. D. Elsen is assistant superintendent.

Dravo Begins Construction Of $400,000 Research Center

Ground has been broken at Pittsburgh, Pa., to begin a $400,000 building program for centralized research operations of the Dravo Corporation. Objectives of the new facility will be to improve the performance and durability of existing products and equipment and to develop new types of equipment for all branches of commerce and industry. (Dravo's diversified activities include the production of sand and gravel.)

The Dravo Research Center will be a T-shaped masonry structure adjacent to the company's main plant. One of the three principal laboratories to be set up in the building will be equipped for physical testing of concrete.

First Cargo of Israeli Cement Received at Bridgeport, Conn.

Following the recent docking of the *M. S. Tamar* at Bridgeport, Conn., the first shipment of portland cement from Israel to the United States was unloaded for the City Lumber Company of Bridgeport. Arrival of the freighter with this 3,500-ton shipment also marked the first call of an Israeli merchantman at a Connecticut port.

The cement, packed in 75,000 bags of 94-lb. each, was manufactured by the Nesher Portland Cement Works, Ltd., Haifa, the largest of Israel's three cement producers. Last year's production, in excess of 560,000 tons, overcame a former cement shortage; and due to the increased output of new production units, Israel now has an exportable surplus.

Great Western Aggregate To Make Lightweight Product

A $750,000 contract has been let by Great Western Aggregate, Inc., for the conversion of part of its alumina plant at Laramie, Wyo., to the production of lightweight aggregate.

Robert F. Blanks, vice-president and general manager of the firm, stated that work already has begun and that the project should be completed soon after the first of next year. Pilot plant testing has been completed, and the raw material will be obtained from Benton shale at a deposit about six miles south of Laramie.

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Quarry Firm Beats High Cost Of Purchased Power— Builds Own Power Plant

Diesels cut operating costs materially at Kentucky-Virginia Stone Co. quarry

THE decision to construct a diesel power plant at one of its two limestone quarries near historic Cumberland Gap is paying off in decreased operating costs for the Kentucky-Virginia Stone Company, Inc., of Middlesboro, Ky. Despite a widely fluctuating load at the quarry, the two 360-hp. diesels installed are delivering dependable power at a cost well below the projected cost of purchased power and substantially lower than the company's previous steam plant operating cost.

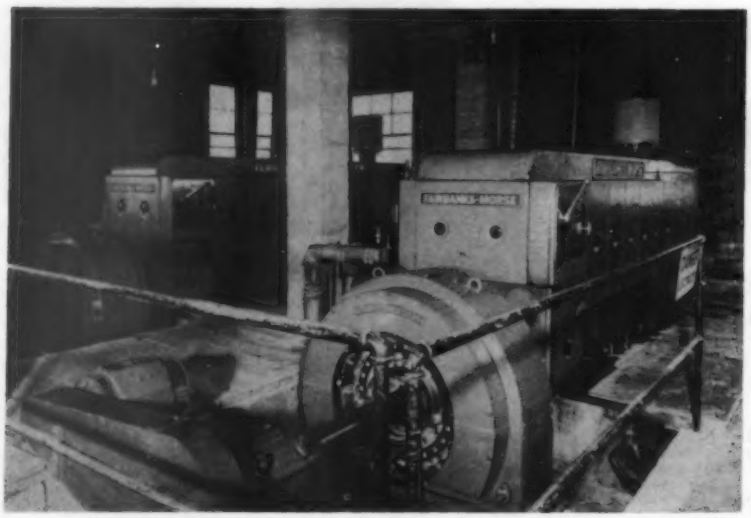
W. B. Paynter Jr., vice-president and secretary, reports that the decision to generate company power at this quarry was made chiefly because of the high demand charges that would have been encountered had purchased power been brought in. The motor-driven conveyors, crushers, and other equipment at the quarry are operated sporadically with frequent starts and stops, which is characteristic of quarry operations, and the result is a power load marked with closely spaced peaks and valleys. Power factor penalties, due primarily to the quarry's remote location, also influenced the decision.

In 1954, the two Fairbanks-Morse diesel engines alternated on a five-day, 40-hour per week scheduled, recording a combined total of approximately 2,016 hours of operation. In this 12-month period they produced a total of 278,950 kw.-hr., representing an average hourly load at the power plant of 133 kw. Since each diesel drives an alternator rated at 245 kw., the load factor reflected is only about half engine capacity. Peaks ranged above 245 kw., which means that each engine was frequently called upon to operate under overload conditions and valleys often fell below 100 kw.

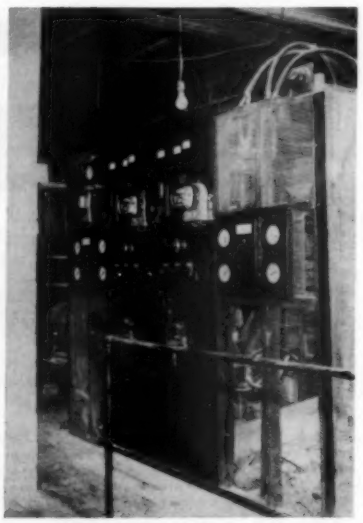
The Kentucky-Virginia Stone Co. is a major supplier of crushed limestone for southern highway construction, railroad ballast, and industry. The firm maintains two quarries in the vicinity of Middlesboro, one at Pineville, Ky., about 12 miles to the west, and another at Gibson Station, Va., about the same distance to the east. The Pineville quarry is a small roadside operation producing about 500 tons of stone per day. Power for its crushers and other motor-driven equipment is purchased from Kentucky Utilities as an average cost of 2.54 cents per kw.-hr., including demand charges. In 1954 a total of 166,700 kw.-hr. was purchased at this rate.

The Gibson Station quarry, where the two Fairbanks-Morse diesels are installed, is by far the larger of the two, producing between 1,000 and 1,500 tons of crushed stone per day, or more than 300,000 tons per year. Originally opened in 1913, the quarry is located on a 15-acre hill in the Cumberland mountains, unlike most limestone quarries, which are generally found in river basins. Kentucky-Virginia Stone acquired the site in 1929 and in 1942 stripped and cleaned a second quarry at the same location.

When Kentucky-Virginia acquired title to the Virginia quarry in 1929,



Side by side in the Kentucky-Virginia Stone Company's power plant are two 6-cylinder diesel engines, each rated at 360 hp. at 514 r.p.m. and driving a 350-kv.-a., 245-kw. alternator. Shown are the 5-kw. exciters, the air-take filters, and the governors, mounted in a simplified, one-lever control panel.



Power is controlled at this 2-panel switchboard, equipped with circuit breakers and totalizing kw.-hr. meters. The gauge panels (right and left) serve the two diesel engines.

COULD FILL 48,000 RAILROAD CARS PER MONTH! Owned by a major coal company, this electric shovel weighs approximately 3,500,000 pounds and has a dipper capacity of about 50 cubic yards. Nevertheless, the mammoth machine is capable of climbing grades steeper than 20%! To help it achieve maximum performance in this grueling work, its owners, after testing nearly every major brand of gear lubricants, chose Cities Service L Compounds for the job. The results have justified this choice.

BIG job . . . BIG machine . . . BIG lubricants!

Gear Oils Of Almost All Major Refiners Were Tested In This Giant Shovel. Cities Service Got The Job.

This giant 50-yard shovel is one of several currently in use by a major coal company. This same company also employs in its strip-mining operation, an extensive fleet of haulage trucks, bulldozers, earthmovers, coal preparation plant equipment, and miscellaneous vehicles.

Not long ago, it was decided to attempt to simplify and standardize the gear oil requirements of this equipment. Following this plan, the company first tested the gear oils of nearly every major refiner. The result: Cities Service L Compounds were chosen to do the job!

Again and again, where there's a big job to be done, mining men turn to Cities Service . . . because they've found Cities Service lubricants do the job better, do it easier. And the same is true of Cities Service Lubrication Engineers. If you have a lubrication problem . . . or if you'd simply like to check the efficiency of your present lubrication procedures, why not call in an expert Cities Service Lubrication Engineer. Simply contact your nearest Cities Service office or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

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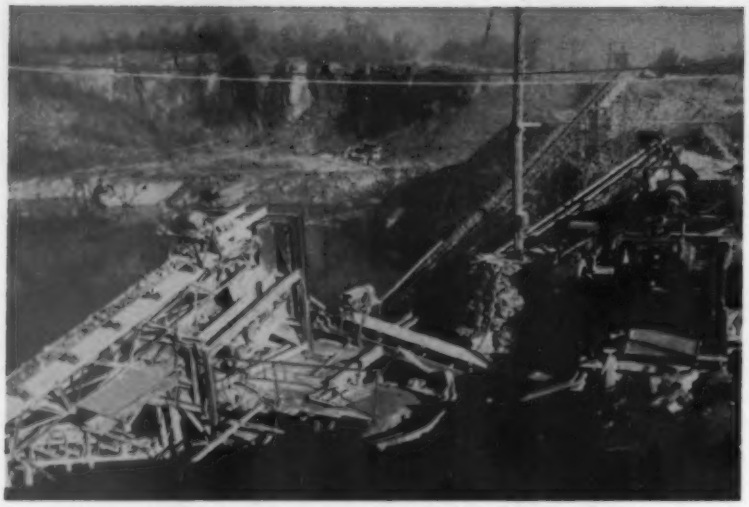


The conveying and screening system in operation at the Virginia quarry. Stone from the jaw crushers is moving up the conveyor (left) and dropping down on a double-deck screen. The cleaning machine, equipped with a 5-in. centrifugal pump, driven by a 65-hp. diesel, is seen at the right.

all crushing, elevating, and screening equipment in the original tipple was driven through a system of main and jack shafts by a reciprocating, low-pressure steam engine. The drive was *via* an old-fashioned flat transmission belt. This system was continued in operation until 1944, shortly after the second quarry was opened. At that time a rocking-valve-type Corliss steam engine was installed and the original hand-fired boilers were replaced with stoker-fed boilers of 100 hp., 125 hp., and 225 hp. respectively.

Steam remained the principal source of power at the quarry during World War II and throughout the early post-war years. Due principally to the rising price of coal, operating costs continued to mount from year to year.

By 1950 a post-war boom in highway construction was sweeping through the eastern portion of the country, and to meet increased demands for crushed stone Kentucky-Virginia converted its old tipple into a secondary crushing plant and constructed a new primary crushing, elevating, and screening system ahead of it. The new system feeds stone to a surgepile, which in turn feeds the secondary plant.

Installation of new equipment meant that additional power was needed at the quarry. After prolonged study company officials decided against expansion of the existing steam facilities because of the high capital investment and high operating costs involved. At the same time a study of the rate structure offered by the local power company, including demand charges and power factor penalties, convinced them that modern diesel engine equipment installed in a company-owned power plant offered the best possible solution.

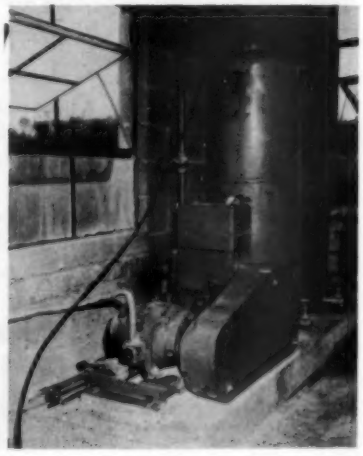
Accordingly, a power plant was constructed of concrete block near the old No. 1 quarry, which had been transformed by rain water into an artificial lake, 90 ft. deep. Two 6-cylinder Fairbanks-Morse Model 31A8½ diesel engines were installed, each rated at 360 hp. at 514 r.p.m. and driving a 350-kv.-a., 245-kw., 3-phase, 60-cycle, 480-volt alternator. V-belted to each generator shaft is a 5-kw., 125-volt d.-c. exciter. Two engines were installed to guarantee 100 percent standby capacity and to provide for future expansion.

The new power plant was completed at approximately the same time as the primary crushing system, going on the line in December, 1950. The old steam system was kept in operation until the following spring, when the necessary motors, motor controls, and wiring were installed in the converted tipple. In April, 1951, the final phase of the project was completed, and the two Fairbanks-Morse diesels began to carry the quarry's full load.

Fuel oil is delivered at the power plant by tank truck and is metered as it is unloaded into a 2,114-gal. underground storage tank. From storage, fuel flows through full-flow strainers to the individual engine-driven supply pumps, reaching the injection pumps and nozzles through duplex, bag-type filters. There are no day tanks. Metered oil from

This concrete block diesel power station was constructed in 1950 by Kentucky-Virginia Stone at its Virginia quarry.

Starting air for the two diesel engines is supplied by this 2-stage compressor, V-belted to a 3-hp., 1735-r.p.m. motor. Compressed air is stored in the two bottles.



storage is also used in diesel-fired stoves to heat various buildings throughout the quarry.

A high-detergent type of lube oil is circulated under pressure through the engine by built-in engine-driven pumps. As it leaves each engine, it passes through a full-flow strainer, a manually-controlled proportioning valve, and a shell-and-tube type cooler and then back to the engine. A by-pass on the pressure side of the engine-driven circulating pump directs a continuous supply of lube through a three-cartridge, cellulose-packed filter, providing added protection. So effective is this filtering arrangement that no oil change was considered necessary during the first four years of plant operation. Even then, W. Guy Moore, plant operator, reports that the lube was just as "pretty" as when first put in.

Jacket water makeup is drawn from the nearby lake by a 2-in., 7½-hp. motor-driven pump and is treated in a water softener before being added to the closed system of each engine. An engine-driven pump circulates water through each engine and through a shell-and-tube type of heat exchanger for cooling.

Raw water for the lube coolers and heat exchangers is drawn from the same artificial lake and is collected in a 17½- by 10½- by 5-ft. hot well located outdoors against the plant's north wall. Should lube oil or jacket water temperature run high, the discharge from the engine-driven circulating pumps is sprayed over the baffle boards which enclose the hot well on all sides. This provides the additional cooling needed.

Filtering the scavenging air for each engine presents a problem in all quarries, due to the high dust content of ambient air. Kentucky-Virginia solved this problem by mounting the impingement-type intake filters on the engine frames, rather than outside, and by changing the filter elements at least once a week. Exhaust gases are expelled through vertical silencers rising through the roof of the plant. Starting air is supplied at a pressure of 250 lb. by a two-stage Fairbanks-Morse compressor, V-belted to a 3-hp., 1735-r.p.m. motor.

Individual gauge panels containing multi-point exhaust pyrometers and pressure gauges on fuel oil, lube oil, jacket water, and scavenging air are mounted on each side of the plant switchboard. The pressure gauges, with the exception of the scavenging air gauge, are double reading and can be seen clearly from the control panel of each engine. The two-panel switchboard is equipped with oil circuit breakers, voltmeters, ammeters, kilowatt meters, totalizing kilowatt-hour meters, voltage regulators, and a synchroscope.

One of the 15-ton diesel-powered dump trucks is shown unloading shot rock into the jaw crusher. The quarry is equipped to produce 1,500 tons of crushed stone per day, or 300,000 tons per year.

This is a one-man plant, a factor which has helped minimize operating expenses. Actually, only a portion of Mr. Moore's salary is charged to the operation of the two diesel engines. In the morning, after putting one of the engines on the line, he generally goes down to the maintenance shop. Since he is a mechanic, he is responsible for the service and repair of much of the quarry's equipment. Actually, if the quarry operated on purchased power, Mr. Moore would be retained as a full-time mechanic, with no reduction in labor costs.

In the meantime, the heavy-duty engines run unattended. If the jacket water or lube oil temperature should run high, or if lube oil pressure should drop, an automatically-controlled siren on the plant roof would warn Mr. Moore. Each En-Bloc engine generally carries the full quarry load for a 5-day, 40-hour week, the second engine taking over the following week. This permits Mr. Moore to check each unit when he has the time, and thus to maintain both units in top operating order.

The motors used to drive the various crushers, conveyors, elevators, and screening equipment at the quarry range from 5 hp. to 150 hp. The jaw-crusher motor is 150 hp., the motor driving the hammer crusher in the old tipple is 100 hp., and the gyratory-crusher motor, also in the old tipple, is 75 hp. Most conveyor or elevator motors are 5 hp. and 10 hp.

As in most stone quarries, the operation at this quarry is divided into three phases: stripping, quarrying, and crushing. In the first phase the top 20 feet of overburden is removed by drilling and shooting, diesel-powered shovels and trucks stripping the quarry down to clean rock. Once this is done, wagon drills bore vertical blast holes, into which dynamite is packed. The clean rock is then "shot" into convenient sizes and loaded into 15-ton Euclid trucks by diesel-powered shovels with a 1½-cu. yd. bucket. These trucks haul the "shot" rock up to the jaw crusher, located near the new power plant, completing the first phase of the operation.

In the motor-driven jaw crushers the rock is reduced to less than 6 in. in diameter. A motor-driven conveyor belt carries the product to a two-deck screen, the top screen having 6-in. openings and the bottom screen 1¼-in. openings. Stone in excess of 6 in. is returned to the jaw crusher, while smaller stone passing through the 1¼-in. screen is belt-conveyed to a second screen with ½-in. openings. Here it is classified into two sizes, one bin holding ½- to 1¼-in. stone and the other stone of less than ½-in. diameter. These sizes of stone are ready for immediate shipment.

Stone between 1¼ in. and 6 in. diameter is belt-conveyed from the double-deck screen to a surge pile, which feeds the secondary crushing plant or tipple. Here four different sizes can be prepared at one time, although a total of 40 different sizes can be achieved by rerouting the

stone through the crushers. Such a wide variety of sizes is sometimes necessary because of the size differentials specified by individual states.

Stone from the surge pile reaches the secondary plant through a tunnel and goes directly to three reduction crushers. The discharge from the gyratory crusher is carried *via* a bucket elevator to a four-deck screen, while the discharge from the hammermill and cone crushers goes to a surge bin, to be belt-conveyed to a 5-deck screen. Stone trapped in the fifth deck, which has 1¼-in. openings, is returned to the crushers. All other stone passes through the remaining screens and is classified and stored for shipment in four bins, one for ½- to 1¼-in. stone, the second for 3/16- to ½-in. stone, the third for No. 10 to 3/16-in. stone, and the fourth for 0 to No. 10 stone. Normally, the Virginia quarry maintains 10,000 to 20,000 tons of stone in storage at all times.

In addition to the facilities described, the quarry also maintains a cleaning machine, which is used only occasionally, according to the condition of the rock. When this cleaner is in operation, stone from the jaw crushers passes through the cleaning machine on motor-driven belt conveyors and is washed in the discharge of a 5-in. centrifugal pump, driven by a 65-hp., 1200-r.p.m. Fairbanks-Morse diesel engine.

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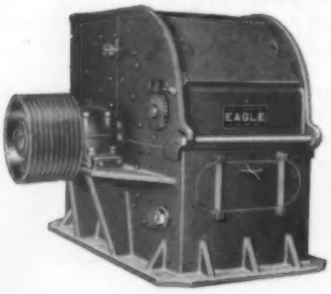
When it comes to loading stone, gravel, cinders, dirt, snow — in fact, any loose material, try this EAGLE LOADER! Gets around the yard or along the highway at *truck* speeds — one-man operated — handles 3 to 5 yds. per minute.



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STATEMENT OF OWNERSHIP

Statement required by the Act of August 24, 1912, as amended by the acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233) showing the ownership, management, and circulation of PIT AND QUARRY, published monthly at Chicago, Illinois, for October 1, 1955.

1. The names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, PIT AND QUARRY PUBLICATIONS, INC., Chicago, Ill.; Editor, W. E. Trauffer, same; Managing Editor, W. E. Trauffer, same; Business Manager, William A. Wilson, same.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

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3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

W. A. WILSON
Signature of Business Manager.

Sworn to and subscribed before me this 3rd day of October, 1955.
(SEAL) FRANK J. CORNYN.
(My commission expires Sept. 4, 1958.)

Menominee, Mich., Concern Gets German Bagged Cement

As a forerunner of St. Lawrence seaway traffic, the German motorship *Ciandra*, out of Bremen, Germany, recently docked at Menominee, Mich., with a cargo of bagged cement for the Limestone Products Company of Menominee.

Stephenson Smith, president of Limestone Products, has been informed by the U. S. Customs office at Detroit that this is the first cargo of German cement to be brought into the Great Lakes.

More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

PORTABLE TRUCK SCALES of 20- and 25-ton capacity are announced by the *American Scale & Vise Co.* A time-proven ball-check principle floats the platform on hardened steel bearing balls to protect the scale mechanism and pivots from shocks of trucks rolling on and off the platform. (1)

MINERAL DRESSING NOTES is the title of this informative booklet put out by the *American Cyanamid Co.* In it are discussed such items as promoters or collectors, frothers, modifying agents, activating and depressing agents, and flotation of nonmetallic minerals. (2)

TRANSMISSION TOPICS is a free publication released by the *Fuller Manufacturing Co.* that covers many topics of interest to any user of power transmission equipment. In a recent issue the featured articles was "How to Order Transmissions," using a simplified ordering chart. (3)

PINCH-TYPE VALVES made by the *R K L Valve & Mfg. Co.*, are quick acting, hand operated, protect against cutting rubber body on shut-off, and are light weight. They are available at 4:1 ratio in diameters up to 4 in., and at 3:1 for sizes larger than 4 in. (4)

SINTERING HEARTHS for roasting and agglomerating are offered by *The Mace Company.* Their models assure higher capacity and tonnage due to engineering techniques described in this brochure. Other products described include smelting furnaces, and slag and rock wool plants. (5)

WORN GROUSERS are effectively built up by welding Tractor Strip, made by *Marquette Mfg. Co., Inc.*, to the worn surfaces. This strip which restores pulling power to old crawler tractors, has high resistance to impact and abrasion, and is easy to apply. (6)

FEEDERS AND BINS are illustrated in this catalog of the *Diamond Iron Works Div. of Goodman Mfg. Co.* Apron feeders are available in five standard widths from 24- to 48-in. All Diamond plate feeders are made in 5-ft. lengths, and can be furnished with either single or double eccentric. The steel aggregate storage bins are made in capacities from 10 to 125 cu. yd. (7)

FORCE-FEED LOADER with capacity of as much as 5- to 6-cu. yd. of stockpiled dirt, and new gather width handling windrows up to 84-in. is supplied by the *Athey Products Corp.* in their new 7-11 model. Loading speeds provided range from .26 to 1.74 mph and travel speeds range from 3 to 20 mph. (8)

MAGNETIC DRUMS which automatically and economically remove tramp iron or ferrous material from transported materials are available from *The Homer Mfg. Co., Inc.* Complete performance data and application guides are included. (9)

MECHANICAL COUPLINGS of the flexible, gear type are made by the *Philadelphia Gear Works.* This catalog describes the new Sphereflex line of curved root, spherical tooth couplings, and provides complete installation and selection information. (10)

BULK MATERIAL HANDLING is faster and more economical when using the automatic, self-unloading Bulkmobile manufactured by *Baughman Mfg. Co., Inc.* Among the quality features included are heavy-gauge body hatches, vibrator, and hydraulically-operated conveyor attachment. (11)

TRACTOR SHOVEL of 2¼-yd. capacity, with 105 net hp. engine and 11-ft. 7-in. dumping height is available in the new HD-11G by *Allis-Chalmers.* This 32,000 lb. unit offers an advanced design hydraulic system which provides safer operation, greater visibility, and improved maintenance simplicity. (12)

PYROMETER which provides new and greater flexibility in the fast and accurate measurement and automatic control of high temperatures is available in the PT 556 Photoswitch photoelectric pyrometer released by the *Photoswitch Div. of Electronics Corp. of America.* It operates over a range of from 1000 to 5000 deg. F. and will respond to changes of 5 deg. F. (13)

AGGREGATE MIXING units which reduce dust on gravel roads by thoroughly mixing water and calcium chloride with the aggregate before it is discharged from the surge bins or gravel plants into a truck body have been announced by the *Iowa Mfg. Co.* (14)

MATERIALS HANDLING is low in cost and efficiently handled when using the Load Lugger system offered by the *Brooks Equipment & Mfg. Co.* This versatile system uses a detachable hopper for loading the material at low height

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and then an attachment on the truck which picks it up, carries it to the destination, and dumps it. (15)

NEW V-BELT DESIGN by *E. I. du Pont de Nemours & Co.*, reduces sheave width, prevents "running off", and provides twice the pulley-contact area of a comparable set of V-belts, according to the maker. An article in the firm's latest Neoprene Notebook gives full details on this interesting development. (16)

CRUSHING PLANT which is portable or packaged is offered in the new Cedarapids Super tandem model by the *Iowa Mfg. Co.* It offers a 10- x 36-in. jaw crusher, 48- x 12-in. horizontal vibrating screen, and a 24- x 16-in. roll crusher. (17)

CLASSIFIERS made by the *Bird Machine Co.*, have the entire operation under cover, which assures low upkeep. This completely automatic centrifugal unit that turns out over 100 tons per hour occupies only 150 sq. ft. of floor space. (18)

DRILLS, drill arms, replacements, and permissible drilling machines are among the products made by *Dooley Bros.* The company's Superior 5600 drill arm and 5100 drill can drill 120 holes per shift, 4 in. in diameter, and 9 ft. deep. (19)

FANS for every need are described in this brochure by the *American Blower Corp.* In it are a series of articles on considerations in fan selection and a discussion of fan control methods. (20)

DUST PROBLEMS are alleviated by treating soil with *Gulf Oil Corporation's* Sani-Soil-Set. A light-colored liquid petroleum product, it has extremely low volatility and is insoluble in water and therefore provides long-lasting protection. (21)

SPEED REDUCERS of many varieties are offered by *The Cleveland Worm & Gear Company*. Among the models they offer are a fan-cooled unit, worm below gear, unit with helical gear attachment, worm above gear, cooling tower drive, and drive shaft downward or upward. (22)

3-CONE ROCK BITS that have teeth which are hard faced on both sides with tungsten carbide are available from *Industrial Overlay Metals, Inc.* For extremely hard formations, bits with cupped shaped outer teeth or with T-shaped outer teeth on all 3 cones are available. Bits are also made by the firm for hard and for medium hard formations. (23)

MOTOR CONTROL is the subject of this new bulletin put out by *General Electric*. It outlines in detail the features of the high-voltage, current-limiting, fused starters made by the company for co-ordinated control of many types of motors. (24)

SPOT WELDING from one side is easily accomplished using the inert-gas shielded tungsten-arc process. This booklet, announced by the *Air Reduction Sales Co.*, shows how this method can be easily accomplished by using their equipment. (25)

TRUCK TIRES containing from one to eight miles of flexible, high-strength wire are now available from the *United States Rubber Co.* The steel wire, according to the firm, makes a tire tread rupture-proof, doubles cut resistance, and eliminates tread cut growth. (26)

SCALE ERRORS can mount into surprisingly high losses. This new chart released by the *Nat'l Assn. of Scale Manufacturers, Inc.*, illustrates how various scale errors can be costing you really appreciable amounts of money. (27)

COMPRESSOR of 125 hp. that is electrically-driven has been announced by *Ingersoll-Rand*. This new size is extremely light and can be readily moved. It incorporates a new single-core, horizontal-flow intercooler. (28)

CONVEYOR BELTING selection is always easy and convenient when this free wall chart covering the wide selection of belting made by *Hewitt-Robins, Inc.*, is nearby. It also deals with storage of belts, correct design of loading chutes, and other pertinent subjects. (29)

SHOVEL of 3-cu. yd. capacity has been released by the *Bucyrus-Erie Co.* The new model 71-B is readily convertible to dragline, clamshell, or lifting crane. It is powered by a 6-cylinder GM diesel engine equipped with Torcon torque converter. (30)

PILOT PLANT and laboratory equipment made by the *Denver Equipment Co.* is listed and described in this complete catalog. In it are over 146 different items to help you establish your own laboratory testing needs. (31)

BLOCK MIX for making lightweight castable blocks for insulation which is offered by the *J. H. France Refractories Co.*, becomes an initial cost reducer when plastered around high-pressure steam lines. It does not disintegrate when in contact with steam or hot water. (32)

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Use this loop-lock half-hitch to connect a trunk line with a branch line of Plastic Reinforced or

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Plastic Wire Countered Primacord is far less flexible than the Plain and Reinforced types, and its plastic covering is *smooth.* So, play it safe . . . use a continuous, unbroken length in the hole, and attach the down line to the trunk line at a right angle with the loop-lock half-hitch shown here.

See your Explosives Supplier, or write to
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2. Loop the end of the Plastic Wire Countered Primacord branch line and pass this loop through the figure eight as shown.

3. Pull the Primacord trunk line *tight* so that the half-hitch grips the doubled-over branch line below the loop.

4. Pass the free end of the branch line Primacord up through the loop as shown above. It can't slip off now!

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P-25

N.S.G.A. Board Members Map Progress Along Wide Industry Front

THE boards of directors of the National Sand and Gravel Association and the National Ready Mixed Concrete Association held their semi-annual meetings September 26 to 28, 1955, at the Homestead, Hot Springs, Va. From a business standpoint, these were among the most important meetings ever held by these groups; they were well attended and many vital matters were discussed. The N.S.G.A. board met Monday, September 26, the N.R.M.C.A. board on Tuesday, and the joint meeting of the two boards was held on Wednesday. The locale was ideal, the Homestead and its extensive facilities providing a wide variety of activities for the members and their wives outside meeting hours.

By WALTER E. TRAUFFER

In addition to the usual business reports by members of the staff and officers of the Association these important subjects were discussed: percentage depletion; public relations; zoning; condemnation and land rehabilitation; stream and air pollution; noise; safety, especially on highways; coming conventions and the machinery exposition at Chicago; depreciation practices; secondary boycotts; group bargaining; group insurance; minimum wage; and expanded highway programs. Engineering reports covered railroad ballast, flexural strength tests, short courses, fellowships, and sawed joints in pavements.

The N.S.G.A. board meeting was opened by John W. Murphy (Union Sand & Gravel Company), president of N.S.G.A., after a brief invocation by Ezra C. Knowlton (Utah Sand & Gravel Corporation). According to Mr. Murphy, the industry and Association are both seeing their best years; business is at a record level; the membership in N.S.G.A. is at a peak; and its financial status is excellent. Attendance at this meeting was good, only five of the 45 directors being absent. Four of the eight vice-presidents, who are *ex officio* members of the board, were also present. It was announced that the Association has just finished moving into new and larger offices, on the fifth floor partly in the same building at 1325 E St., N.W., and partly

Vincent P. Ahearn

in the adjoining Munsey Building, which is now the official address.

Vincent P. Ahearn, executive secretary of both associations, gave a brief resume of the coming joint convention in Chicago. Sessions will be held at the Conrad Hilton Hotel, but the machinery exposition will be at the Coliseum, a few blocks away. There will be about three times as much space for the exhibits as at the record show in 1954, and all producers are urged to bring their operating men. There will be no registration fee, and registrations will be accepted at either place. Contractors, highway officials, and others interested have been invited to attend. Total attendance is expected to be far in excess of the record 4,800 of 1954 at Chicago.

Stanton Walker

The convention will open on Monday, February 17, with board meetings of both associations, as well as a comptrollers' conference. Association meetings will be held each of the following three days, except Wednesday afternoon, ending at noon on Thursday. The exhibits will be opened each of the four days at 9 a.m. On Monday they will close at 5 p.m., on Tuesday at 9 p.m., on Wednesday at 6 p.m., and on Thursday at 2 p.m. Those planning to attend are urged to arrive on Sunday if possible.

At the joint meeting of the two boards the dates and places of several future conventions and board meetings were decided upon. The 1956 joint convention, of course, will be at the Conrad Hilton Hotel, Chicago, February 13-16, with the joint equipment exhibit at the Coliseum, a few blocks away. The 1957 joint convention, in line with the Association's established policy of going into the more remote, heavy membership areas in intermediate non-exhibit years, will be in Los Angeles for the first time since 1947. The date and hotel have not yet been selected. The 1958 joint convention will, as in 1956, be at the Conrad Hilton in Chicago, and the joint exhibit at the Coliseum. The 1959 convention will go back to New Orleans, which was such a popular selection in 1951. No decision was made on 1960 and 1962, but San Francisco was tentatively approved for 1961.

The 1956 joint meeting of the two boards of directors had tentatively been scheduled for Lake Placid, N. Y., early in October but this was voted down as the weather can be quite cool there at that time. Instead it was decided to investigate the possibilities of Banff, Alberta, late in August. Should this plan not work

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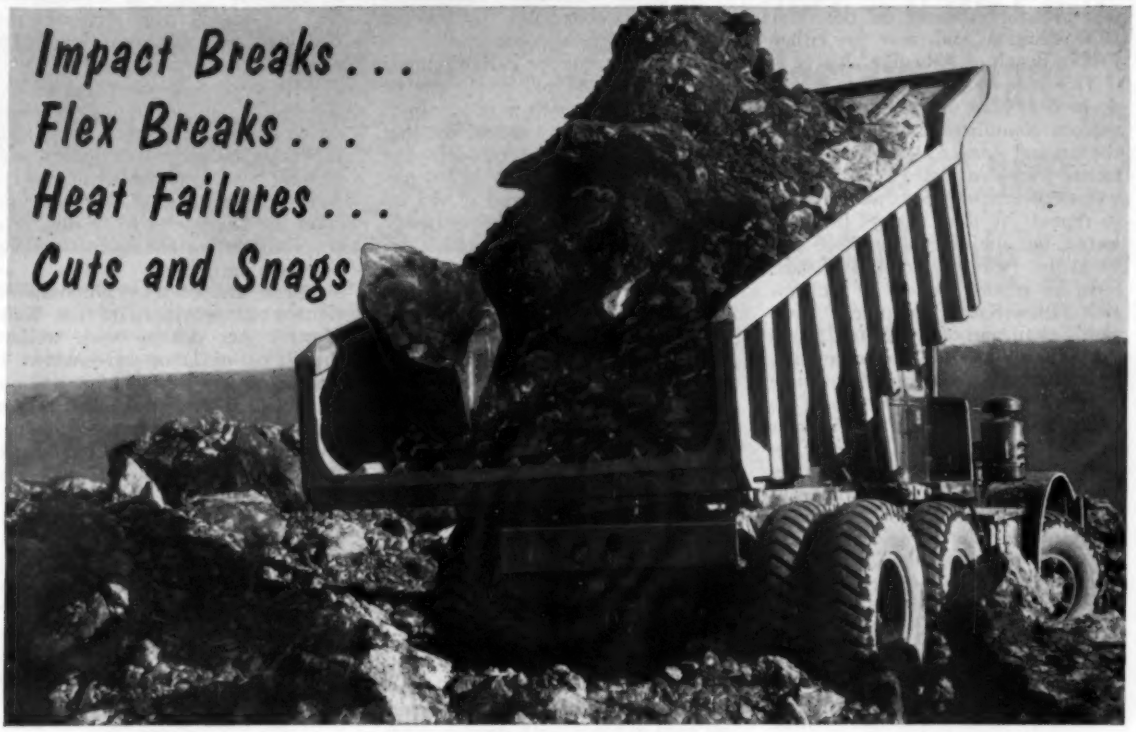

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out, alternative choices were Pebble Beach, Calif., or Asheville, N. C., later in the year. The 1957 location will probably depend on the final 1956 decision and may be either Pebble Beach or Asheville.

This year for the first time it was decided to hold the meetings of the various committees separately from the annual conventions. The Committee Week in Chicago in August was so successful that it was decided to repeat. No date has yet been selected, but the meeting in 1956 will be at the Jefferson Hotel, St. Louis.

In his report, Robert P. McKenrick (Blaw-Knox Equipment Division), chairman of the Manufacturers' Division, stressed the advantages of having an outside equipment show at the coming conventions in Chicago. There is almost three times as much space as formerly. Actually, he said, this expanded space is already 15 percent oversold, and all reservations are not yet in. The space will be fairly distributed and should be adequate. Mr. McKenrick stressed the excellent transportation facilities between the Conrad Hilton Hotel and the Coliseum and the fact that the latter has adequate lunchrooms, etc. The machinery exhibits, he said, will be open all day on the first three days of the convention, during one evening, and until 2 p.m. the fourth day.

A progress report of the Committee on Public Relations was presented by its chairman, E. K. Davison (J. K. Davison & Bro.). He reported first on the meeting during Committee Week in Chicago in August. A proposed program of activity was outlined there which recommended that the committee's work be devoted to the first three of these four fields of activity: (1) zoning, condemnation, and land rehabilitation; (2) stream and air pollution and noise; (3) use of public highways by both employees and owner-drivers; (4) philanthropic and cultural programs through universities and charitable institutions. Active work on the first three of these is under way, and every member is being asked to send in information on any experiences he may have had in connection with these problems.

The discussion following this report brought out the interesting fact that aggregates producers are being blamed for damage to the scenery, when it is really the fault of others. In many states the highway departments decide where sand and gravel pits and borrow pits for highway construction are to be located, and the producer and contractor have no voice in the matter.

The status of percentage depletion for the sand-and-gravel industry was reviewed by J. Rutledge Hill, chairman of this committee. He warned that percentage depletion will be a major concern of the next Congress and urged that all producers be ready to do whatever is necessary to retain it. Every one should see that his congressmen are kept advised of the importance of percentage depletion to this industry and of the industry's importance to the welfare of this country. It was also voted to call a conference of river-producer members to discuss administrative action or legislation which will extend the principle of percentage depletion to sand-and-gravel companies operating in navigable waters.

The members of both boards were given copies of the results of the depreciation surveys for ready-mix and sand-and-gravel plants, showing what member companies are doing. It was voted to send these out to the membership for their own guidance and information. All were warned, however, to change their practices with great care. It was reported that the Treasury Department is revising its Bulletin F on depreciation practices, and it was voted to have the Association counsel keep in touch with developments. Sand and gravel were included in the old bulletin, but not ready-mix.

There was some discussion of the drive of the Teamsters' Union for requiring employers to assist the union in secondary boycotts directed against other employers under the heading of "Protection of Rights." It was pointed out that ready-mix producers of only one city have agreed to do this. This is illegal under the Taft-Hartley Act, but the National Labor Relations Board permits it if the employer agrees.

With regard to the effort of the Teamsters' Union to require employers to agree to area contracts which supersede individual or group bargaining agreements in these two industries, it was stated that so far no company has agreed to do this. Employers were warned against making any such agreement.

There are current proposals to tighten up provisions of the Taft-Hartley Act dealing with welfare provisions of labor agreements. It was predicted that the Act will not be amended during the next session of Congress. Producers were warned to be sure to take part in the administration of welfare funds when they sign a contract with a welfare provision, since they are jointly liable with the labor union.

A progress report on the Group Insurance Plan of the two associations was given by Wliliam Moore (J. P. O'Connell Company). The plan has continued to grow, and eight new companies have joined since the first of the year. Effective July 1, 1955, the plan was made available without life insurance benefits to members in Oklahoma, Ohio, and Texas, pursuant to recent interpretations by their state insurance commissioners. As a result, the plan is now available, at least to a limited degree, to every active member company in the United States. Since

(*Continued on page* 108)

The West Coast was well represented. In this group are Mr. and Mrs. H. Irving Rhine (Bodo Gravel Company, San Francisco); Mr. and Mrs. Edmond F. Brovelli (Basalt Rock Company, Napa, Calif.); John M. Murphy (Union Sand and Gravel Company, Spokane, Wash.); and Mr. and Mrs. Richard K. Humphries and daughter (Pacific Coast Aggregates, Inc., San Francisco).

There's a Du Pont blasting "team" for every size drill hole

2,300 pounds of dynamite were loaded into 99 wagon drill holes (6′ x 6′ spacing) in this 22′ face at the Superior Stone Company granite quarry, Jamestown, North Carolina. For the maximum amount of well-broken rock, Superior used a Du Pont blasting "team"—1¾ x 12 Gelex #1, MS Delay Electric Blasting Caps and a CD-48 Blasting Machine.

Blaster priming a stick of Gelex #1 dynamite with MS (millisecond) Delay Blasting Caps. MS-25 through -175 Delays were used successfully to reduce vibration, improve fragmentation and minimize backbreak.

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6,000 tons of well-broken rock. Gelex #1 dynamite supplied the power, MS Delay Electric Blasting Caps the control, CD-48 Blasting Machine the means of initiation. Result: another blasting job efficiently, economically accomplished.

WHETHER it's a wagon drill hole or the largest of well drill sizes, Du Pont can supply you with grades and sizes of dynamite to match any diameter. For specifications on dynamite or any other member of the dependable Du Pont blasting "team," talk to the Du Pont representative in your area, or write E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

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FOR SUSTAINED HIGH OUTPUT!

more versatility . . .
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more dependability . . .
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HD-6

BULLDOZER-DRAWBAR TRACTOR

Weight	12,400
Drawbar hp	45
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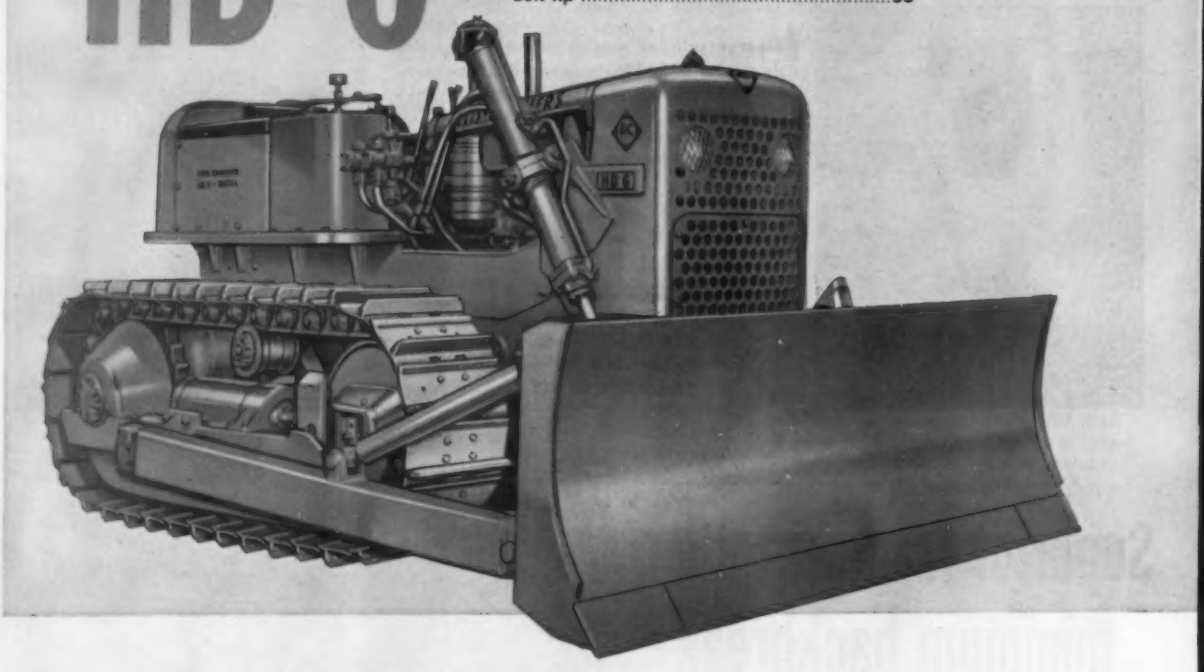

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- ★ Allis-Chalmers heavy-duty diesel engine — with "follow-through" combustion for long life, low upkeep.
- ★ 24-volt direct electric starting — for convenience and efficiency (standard equipment).
- ★ Wrap-around radiator guard for maximum strength and protection . . . tilts forward for easy service.
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- ★ Roller bearing truck wheels — with Positive Seals that keep dirt and moisture out . . . grease in.
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- ★ Tru-Dimension tracks — with new standards of strength and hardness *throughout* for extra wearability.
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- ★ Engine-mounted bulldozers — for top dirt-moving performance and extra tractor life.

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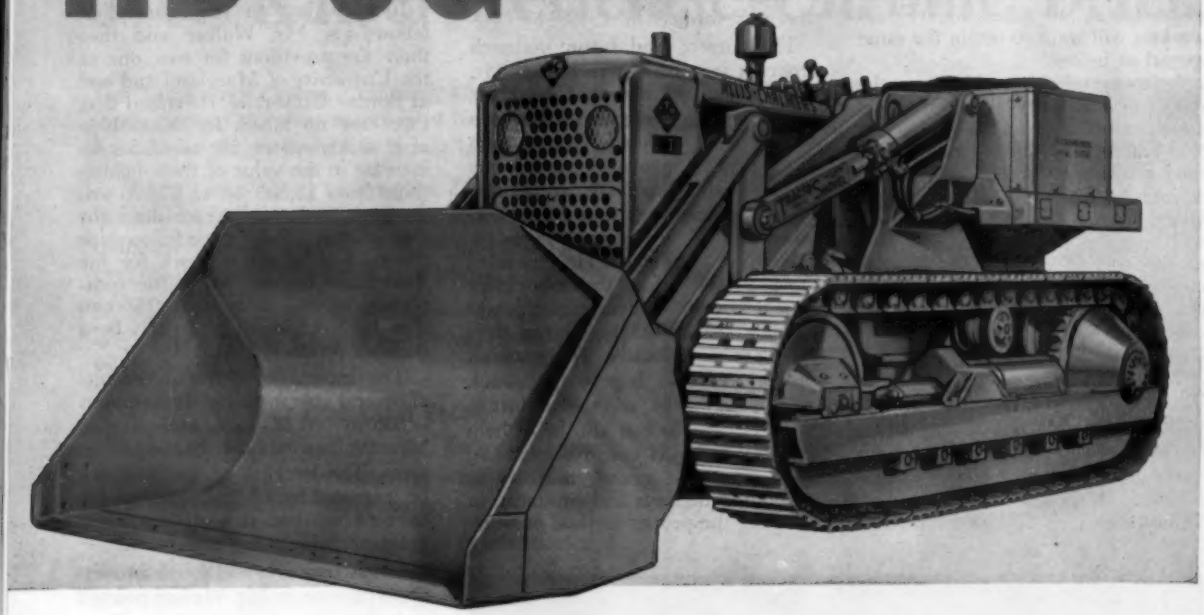
Weight	19,600
Drawbar hp	45
Net engine hp	57
Bucket capacity	1-1/3 cu yd



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★ New two-position bucket — for easy full-capacity loading in any material (standard equipment).

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N.S.G.A. Board

(*From page* 104)

April 1, 1953, the plan has paid $147,217.12 in claims to the employees of participating companies.

This N.R.M.C.A.-N.S.G.A. Group Insurance Plan is only one of numerous benefits resulting from membership in these associations. Full participation by members is also important as it is in competition with insurance plans of labor unions.

There was some discussion of the effect on the two industries of the $1 minimum hourly wage, effective March 1, 1956, applicable to employees of companies subject to the Wage and Hour Law. It is felt that this increased minimum, while it will probably not have any direct effect, will cause an upward swing in the wage spiral, as other higher-paid workers will want to retain the same spread as before.

A feature of the meeting was the report of Stanton Walker, engineering director. He mentioned the fact that ballast for railroads at one time used about one-third of all the sand and gravel produced. Angularity, of course, is the problem. This subject will be given considerable attention at the coming conventions in Chicago. Operating problems will also get full attention. The committee has asked for two full sessions at the convention.

At the joint meeting of both boards Mr. Walker reported on those matters of interest to both industries. He reviewed the history of the engineering department, which was established by N.S.G.A. in 1928, with limited research facilities. In 1937

Ezra C. Knowlton, Utah Sand and Gravel Products Corp., Salt Lake City.

the laboratory was moved to the University of Maryland and in 1949 to its present excellent quarters in the new engineering building. The Joint Research Committee of the Association was formed in 1949.

The current and future research program was briefly reviewed. Mr. Walker pointed out that members are kept well informed on work in progress or completed. The research under way on flexural strength is one of the most expensive and time-consuming investigations yet undertaken, and some findings will be reported on in Chicago. He reminded those present that the laboratory facilities are always available to member companies for things they can't get done locally. The research program, he said, is geared to attack special problems of the industry. The associations can also be of help in other ways. It can, for example, assist sand and gravel members in evaluating deposits and products, in selecting the proper method of beneficiation, soft stone elimination, etc.

There was considerable discussion of short-courses, not only on ready-mix but also one proposed on bituminous concrete. According to Mr. Walker, the ready-mix courses have been very popular and successful; but there are now so many local courses that most members can get this service locally. These local courses are either participated in or advised by members of the engineering staff, and the entire subject is taking too much of their time away from their main objectives. He recommended that the Association's course be limited to one week in November and that it combine both ready-mix and bituminous concrete. The engineering staff, he said, will continue to be available for advice on the local short-courses.

In reporting on the Association fellowships, Mr. Walker said that there are provisions for two, one at the University of Maryland and one at Purdue University. He stated that there are no takers for fellowships after this semester. He asked for an increase in the value of these fellowships from $1,500 up to $2,500 annually in order to attract the right type of men. Under these fellowships the student agrees to work for the Association for two years after completion of the agreement. He can then be hired away, preferably by a member producer.

The flexural strength requirements of several governmental departments —600 to 700 lb.—are, according to Mr. Walker, almost impossible to meet. The strength of concrete can be increased by adding more cement to concrete but it soon reaches a point of diminishing returns.

In discussing sawed joints in concrete pavements Mr. Walker pointed out that limestone concrete is so much easier to saw then hard flint gravel that producers of the latter would have to cut the price of their product 25 cents per ton in order to compete.

One of the highlights of the meeting was the report of Ezra C. Knowlton (Utah Sand & Gravel Products Co.) on his testimony before the House Public Works Committee on the President's highway program. Mr. Knowlton is highly qualified to represent the associations on such a matter as his wide experience includes many years as chief engineer of the Utah State Highway Department. Through the use of charts it was pointed out that in 1954 Federal Aid represented only 12.2 percent of

(*Continued on page* 113.)

A congenial group including Frank L. Kelley (Colonial Sand & Stone Company, New York, N.Y.), Mr. and Mrs. John B. Donovan (Valentine Concrete Company, Springfield, Mass.), and Mr. and Mrs. Robert J. Hummel (Consumers Company, Chicago, Ill.).

"2194 BARRELS PER DAY FOR 505 DAYS!"

over Kaiser Periclase-Chrome Brick

THE Santa Cruz Cement Company, Davenport, California, reports this demonstration of the superior performance of Kaiser Periclase-Chrome hot zone linings:

"Our #2 kiln—lined with Kaiser Periclase-Chrome Brick—had 505 days on it when it went down for a mechanical repair. We had run 1,108,000 barrels of clinker over the lining—an average of 2194 barrels per day!

"When we removed the coating, we found it necessary to replace only 8 feet of the 23 feet of the Kaiser Periclase-Chrome burned brick."

15 Year Production Record

"The remarkable performance of this Kaiser Brick lining established a new 15-year record for our plant. The previous best performance with basic brick was 340 days."

Let us show you *now* how the superior performance of Kaiser Brick can give you increased clinker production at lower cost—with far fewer shutdowns!

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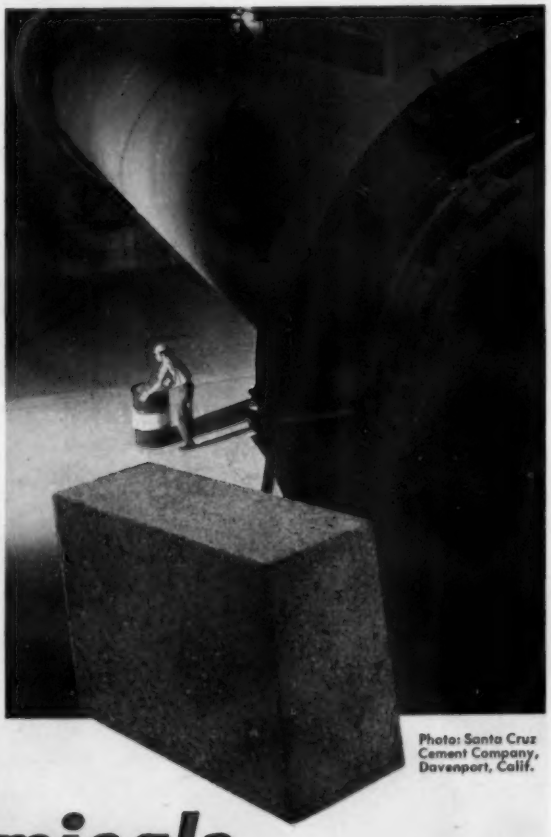

Photo: Santa Cruz Cement Company, Davenport, Calif.

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Portable-Stationary Combination Used By Iowa Gravel Producer

another ON THE SPOT report

FOR the last 30 years the Hawarden Gravel Company, Hawarden, Iowa, has been supplying a good part of the sand and gravel requirements in that northwestern area of the state. Last year, on a 60-acre tract north of the city, a completely new fixed washing plant was erected to operate in conjunction with a portable crushing unit.

The company, which is owned by C. J. Burington, had previously conducted operations in this vicinity by placing portable preliminary processing plants at various gravel deposits and hauling from these sites to a stationary processing and shipping plant located within the city limits of Hawarden.

The present site was formerly leased by Hawarden Gravel, on a royalty basis, to another operator who was supplying material from this deposit to a government dam project. Upon expiration of that contract the company took over the property and started construction of the new facilities.

A compact, rubber-mounted portable plant loading a 10-ton truck at the Hawarden (Iowa) Gravel Company's pit.

Below: This dragline, equipped with a 2-cu. yd. bucket, excavates wet or dry material in supplying the portable plant.

Despite excavations by the former lessee, it is estimated by Rex Burington, plant manager and son of the owner, that sufficient material remains in the deposit for another 15 to 20 years of operation at the present rate of production. He states that the deposit, which averages 20 to 25 ft. in depth, yields about 70 percent of minus ¼-in. material, although sizes up to 10 in. are frequently encountered. Overburden in the area is thin —ranging only up to about 3 ft.

At the pit a Model 6 Northwest dragline with a 2-cu. yd. Hendrix bucket and powered by an ME6 Murphy diesel is used to supply pit run material to a portable crushing and screening plant by discharging directly into the receiving hopper of this unit. The dragline is working both wet and dry material since the water table lies only about 15 ft. below the surface. At about 10 ft. below this seepage level, there is a clay bed, and excavation is not carried beyond that point.

Various crusher settings are used on the portable plant, a Cedarapids Super Junior, depending on the top size desired and whether the product is destined for the main plant or is to be loaded directly into trucks for delivery as unwashed road material. If blended material is not desired either in direct loading for delivery or as plant feed, separation of sand and gravel can be accomplished within the unit, and the sand is taken from the screen on a separate lateral conveyor. This procedure also allows rejection at the pit of fines or coarse sizes, as the case may be, in the event that stocks of either are high at the washing plant.

At the time of the writer's visit about 175 t.p.h. was being processed through the portable plant—at a 1¼-in. crusher setting—and loaded into three 10-ton International trucks for the ¼-mile haul to the washing plant's raw feed hopper. The latter, actually a series of four small steel bins, is a part of a rather novel hopper and conveyor tunnel construction.

In line with the lyrics of a well-known polka, these people really

THE NEW UNIVERSAL 293Q TWINDUAL PACEMAKER

combines peak production with maximum portability

TOP CAPACITY PRODUCTION

The TwinDual Pacemaker gives you three full stages of reduction for top capacity—a Universal overhead eccentric jaw crusher in the first stage and a TwinDual roll crusher for the second and third stages.

No other single unit plant offers so many big-profit advantages. Big primary jaw crusher accepts large rock—lets you work gravel pits containing big boulders. Exclusive TwinDual two-stage roll crusher gives top capacity secondary crushing. Its high ratio of reduction permits the primary jaw to operate at 50 to 100% wider discharge opening. This results in greater capacity—less jaw wear. Larger inclined gyrating screens with full screening area allow 20 to 25% greater output. All operations from apron feeder to delivery conveyor are driven through one single power unit.

For top capacity with three stages of reduction—and a bonus in longer crusher life, lower horsepower requirements and a better quality finished product, choose a Pacemaker. Available in five models for pit or quarry operation. Get complete profit making facts now.

LOW TRAVELING WEIGHT

The primary jaw crusher, apron feeder with grizzly by-pass, operator's platform and structural supports are all mounted as a single unit on skids. This primary unit is bolted to the main truck frame. When highway weight limitations must be met, this unit may be quickly skidded to a low bed trailer and transported separately.

Main plant section hooked up for traveling.

Primary unit skidded to low bed trailer to meet highway weight restrictions.

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rolled out the barrel—or more appropriately, four old brewery tanks—right into an excavation approximately 16 ft. deep and 100 ft. long. These tanks, which had been used as truck loading bins in former locations, are 11 ft. in diameter by 25 ft. in length. Laid end to end they make a very effective tunnel for the raw feed conveyor. The hoppers are mounted above and constructed as a part of the underlying tunnel.

Under normal conditions the haulage units maintain a 40,000-ton feed pile over and around the tunnel bins. At present two of the bins are in use, and through manually-operated slide gates discharge onto an 18-in. belt on a 225-ft. conveyor. The latter unit, chain-driven by a 15-hp. Allis-Chalmers motor through a Falk speed reducer, carries the material up a 30-ft. rise to the top of the washing plant.

Except for equipment supports and framework, this structure is made entirely of reinforced concrete. A 40- by 50-ft. clab, 20 in. thick, has a double layer of ¾-in. reinforcing bars. On this base, three piers, serving as ground storage retaining walls, were erected on 16-ft. centers. Each tapers from a 2-ft. thickness at the base to 1 ft. at the top, and is 20 ft. high by 40 ft. long at the bottom. The resulting two storage compartments will hold about 500 tons of material apiece.

At the top of this structure the raw feed from the tunnel conveyor is discharged onto a 4- by 12-ft. Cedarapids three-deck horizontal vibrating screen. This unit is equipped with sprays and is V-belt driven by a 15-hp. Reliance motor. The minus 1¼- plus 1-in. material retained on the top deck is chuted directly onto a stockpile adjacent to one of the outer supporting piers. Middle and bottom deck sizes—1- by ⅜-in. and ⅜- by 3/32-in. respectively—are dropped to the two bunkers below.

The minus 3/32-in. bottom-deck throughs are flumed to a 10- by 24-ft. Eagle Works scalping tank adjacent to the outer pier. From the seven valves on this tank which are presently feeding one outlet, the sand flows to a 57-in. by 25-ft. Eagle Iron twin screw classifier for dewatering. The resulting product is discharged on the ground, and after sufficient accumulation it is 'dozed directly up the sand stockpile.. Power for the entire operation is purchased from the Iowa Public Service Co. in lieu of drawing on the local powerhouse.

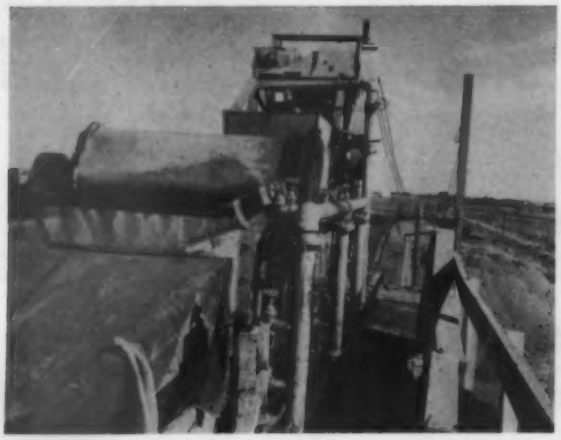
An 8- by 11-in. Gould pump with a 100-hp. G-E motor was installed in a ground-water filled area of the former lessee's workings; it furnishes wash water to the plant at 3,000 g.p.m. through 700 ft. of 6-in. pipe. The pump is mounted on a stand which was designed by Rex Burington to obviate difficulty in relocation. It consists of a pair of 5-ft. tubular steel rear legs that rest on the shore, and a pair of 8-ft. front legs—front and rear joined by 20-ft. top sections. The front legs are inserted in two tubes of slightly larger diameter, all with spaced holes drilled for insertion of a pin. Thus, if a new pumping site has an irregular bottom, the front legs are readily adjustable for maintenance of a level pump platform.

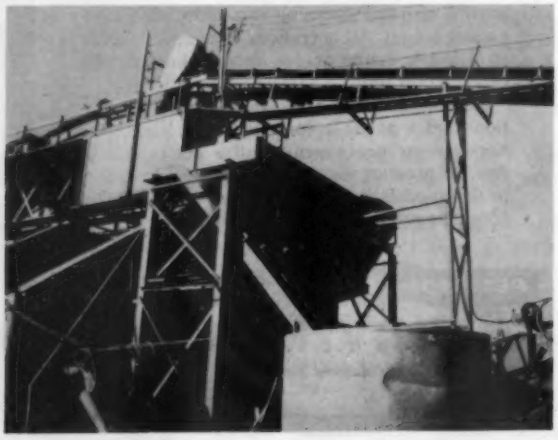
In the storage area a Model 25 Northwest crane with an Owens ¾-cu. yd. clamshell, and a 2-cu. yd. capacity Hough Payloader, are used for stockpile work and direct truck loading. Also set up in this area is an 80-ton, 3-compartment Butler

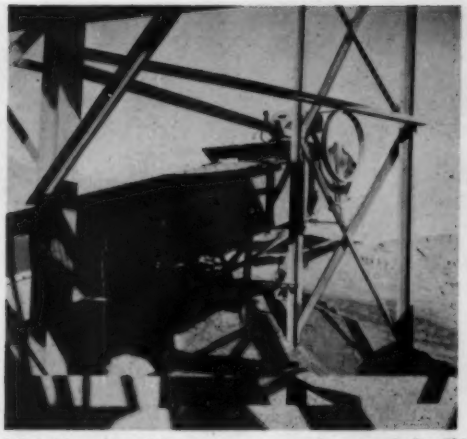
Above: The raw feed conveyor leaves the hopper tunnel on the right to discharge at the top of the washing plant (left).

Below, left: Spray bars are located down the full length of the top screen on this triple-deck vibrating unit.

Below: A view of the scalping tank used in one step of sand processing.







Left: This twin-screw classifier discharges dewatered sand on the right; from this point the material is 'dozed up the stockpile.

Right: Direct truck loading is handled in part by this 2-cu. yd. capacity utility and loading unit.

Weighbatcher bin to accommodate customers' trucks. This is supplemented by a 20-ton capacity Fairbanks Morse truck scale situated at the office. Deliveries by the company are made in three 10-ton Ford trucks.

The two compartments, or bunkers, under the washing equipment were put to an ingenious use last winter during the shut-down period of the washing plant. A large tarpaulin was spread entirely over the plant from the base on one side to within 4 ft. of the base on the opposite side. The 4-ft. gap was covered with translucent plastic. Wiring and a floodlight was put in each bunker, and space heaters were installed. The beams mounted on the top of the piers to support the overhead washing equipment made an excellent track for a traveling crane. As a result, the plant crew had a comfortable and convenient spot for overhaul of machinery and equipment during the winter months.

With few exceptions, the local crew is able to handle repairs using company facilities. As another somewhat unusual application, one Fruehauf truck trailer has been pressed into use as a parts warehouse; another serves as a tool and repair shop. While major engine overhaul is not attempted, the balance of the maintenance work has been readily handled.

N.S.G.A. Board

(*From page* 108)

the total available highway revenue, but that through it the government wielded a profound influence in this field. Even under the proposed expanded programs the federal contribution would be minor.

Mr. Knowlton went on to describe the complicated taxing setup, from the states on down, which pays most of the cost of highway construction. The huge expenditures proposed would, he said, seriously upset the balance of the literally thousands of active taxing and administrating units directly concerned with such a program. This fact was not given proper consideration in the discussions in Congress.

According to Mr. Knowlton, the magnitude of federal highway aid has never been large enough to disturb Federal Treasury or congressional complacency; but the greatly enlarged program proposed is. As a result, Congress for the first time considered it essential to connect proposed federal authorizations with the source of revenue for them. Congress also assumed that the relative size of the proposed Federal Aid would justify its dictating to the states how this money should be spent. This policy reached its climax in the Fallon Bill, which drastically proposed a special heavy-truck tax. This, if carried out, would wreck the work of years by the states in equitably distributing costs among various types of road users. This definitely and for the first time would seriously enmesh federal highway legislation in politics. This bill, he said, deserved defeat.

Mr. Knowlton went on to point out that since 1954 Congress has admonished the states to apply all revenues from special state motor user taxes to the development of highways. Actually, the amount of these funds diverted is, he said, unimportant. Congress, however, has never up to now applied this restriction to itself. The total revnue of the Federal Treasury from these special taxes, said Mr. Knowlton, has always been greatly in excess of federal highway aid authorized by Congress.

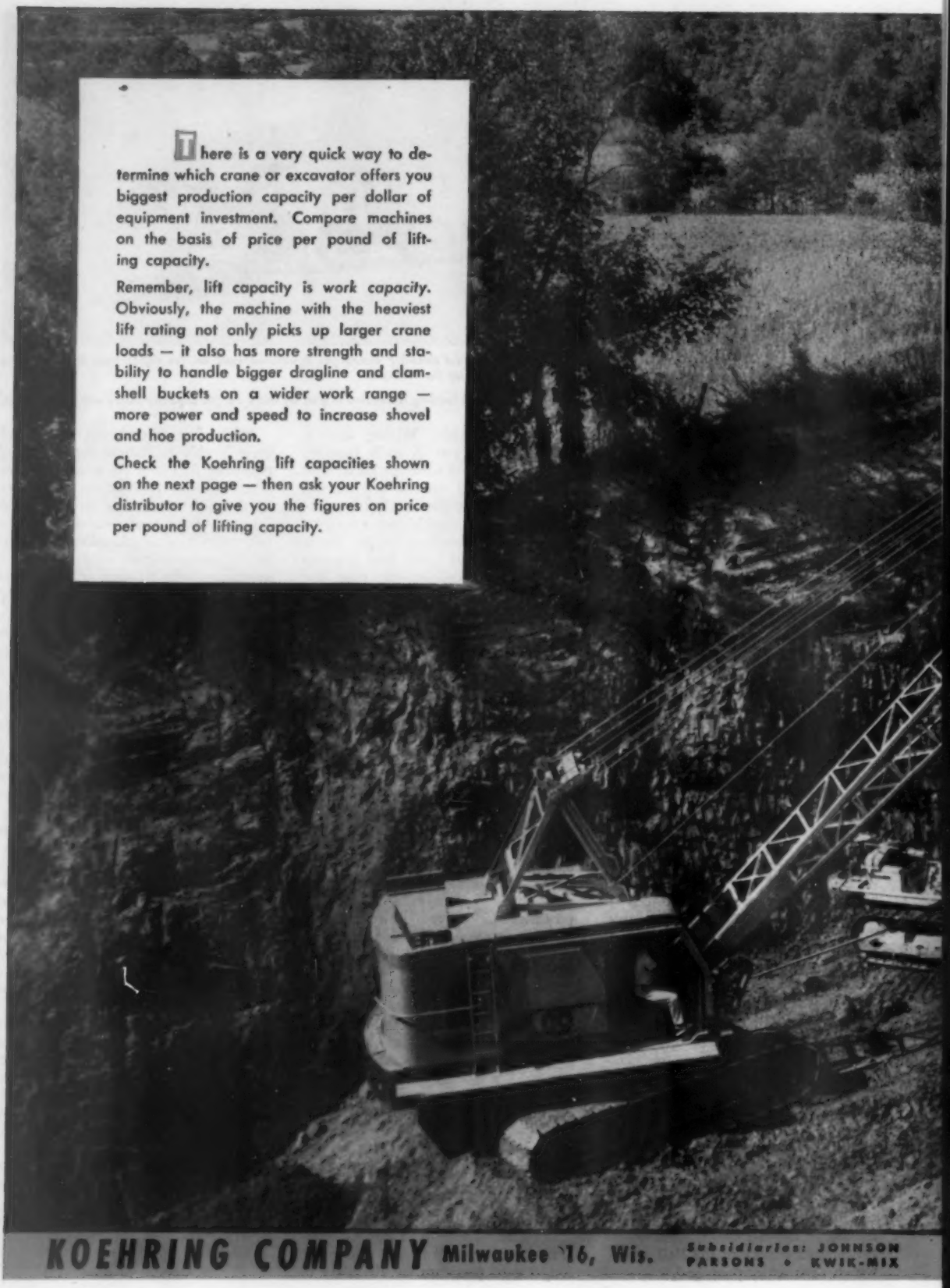
He then described the many various forces which are opposing an expanded highway program and which are putting it in jeopardy. In his opinion, it is unlikely that Congress will approve the creation of a separate federal highway financing authority or a large non-treasury bond issue. If definite financing is authorized, it will probably be handled under standard congressional budgetary procedure. There is basis for hope that Congress will finally approve a long-range program of 10 years or more, but it seems unlikely that financial credit will be given for acceptable existing roads.

It is unthinkable, said Mr. Knowlton, that the added burden of this proposed highway program should be saddled on the federal debt. It would also be far better to increase federal fuel taxes than to permit wholesale extension of toll road development or to impose additional taxes on heavy trucks. He expressed the hope that the 84th Congress will revert to the successful past practice of framing simple authorization bills and leave the problem of raising the money to the Ways and Means Committee and the Senate Finance Committee. He urged that producers do what they can to sway congressional thinking in that direction.

The Board also voted to have its staff do everything possible to get the conflicting factions in Congress reconciled. The approved policy statement urged the passage of a stepped-up Federal Aid highway program both for the interstate and federal primary and secondary systems, about in the dimensions of the Fallon Bill (H7474) but within the following framework:

(1) That it be financed by the Federal Treasury under congressional budgetary control;

(*Continued on page* 121)

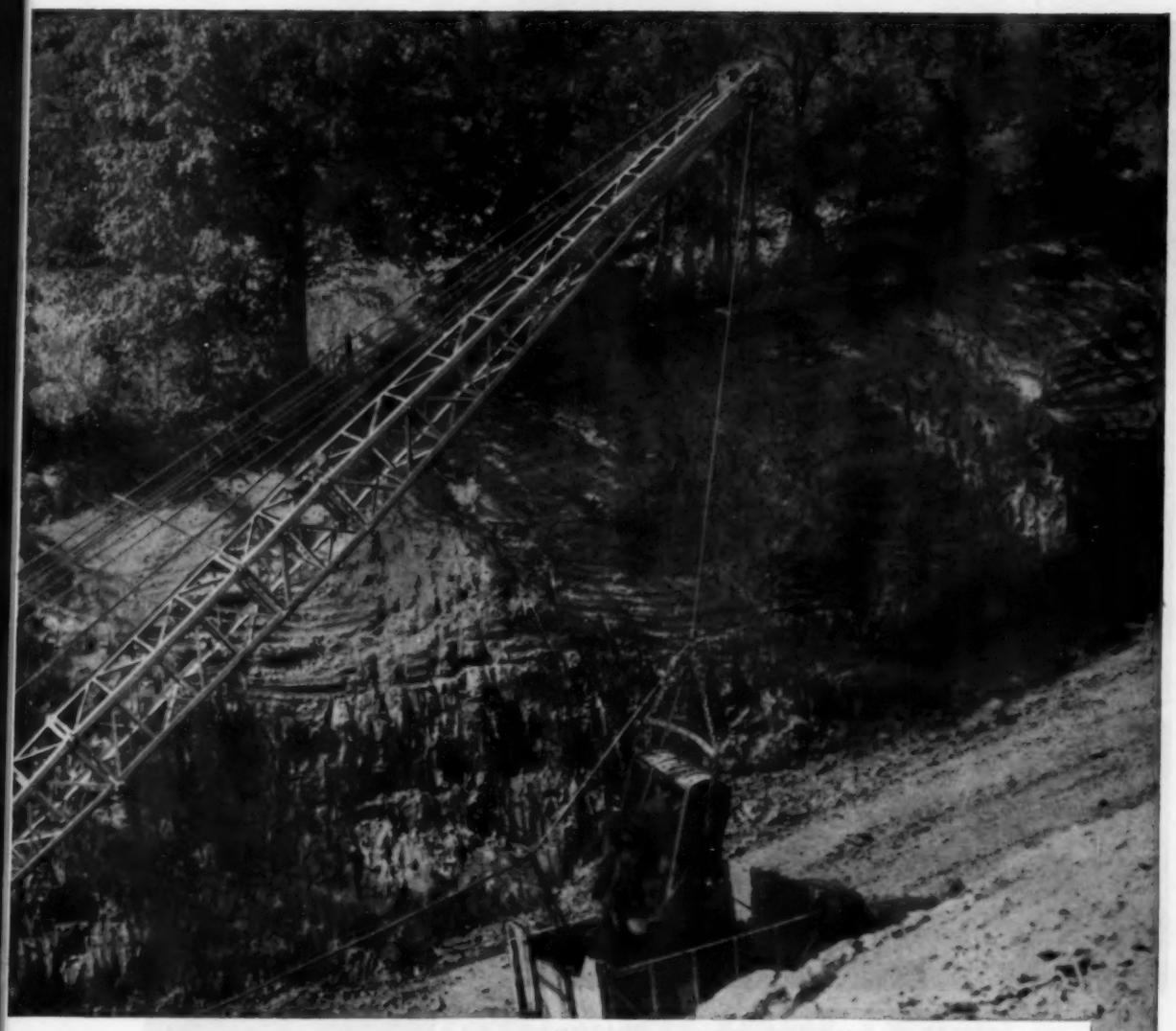


There is a very quick way to determine which crane or excavator offers you biggest production capacity per dollar of equipment investment. Compare machines on the basis of price per pound of lifting capacity.

Remember, lift capacity is *work capacity*. Obviously, the machine with the heaviest lift rating not only picks up larger crane loads — it also has more strength and stability to handle bigger dragline and clamshell buckets on a wider work range — more power and speed to increase shovel and hoe production.

Check the Koehring lift capacities shown on the next page — then ask your Koehring distributor to give you the figures on price per pound of lifting capacity.

KOEHRING COMPANY Milwaukee 16, Wis. Subsidiaries: JOHNSON PARSONS • KWIK-MIX



Check price per pound of lifting capacity

KOEHRING MODEL	SIZE DIPPER	KOEHRING LIFT CAPACITIES (Crawler ratings based on 75% of tipping load. Rubber-tired machines — 85% of tipping load)		PRICE PER POUND OF LIFT CAPACITY*
205 CRAWLER	½-Yd.	20,000 lbs.	30-foot boom at 10-ft. radius	?
205 ON RUBBER	½-Yd.	30,000 lbs.	25-foot boom at 12-ft. radius	?
304 CRAWLER	¾-Yd.	27,800 lbs.	35-foot boom at 12-ft. radius	?
304 ON RUBBER	¾-Yd.	50,000 lbs.	30-foot boom at 10-ft. radius	?
405 CRAWLER	1-Yd.	40,000 lbs.	40-foot boom at 12-ft. radius	?
605 CRAWLER	1½-Yds.	72,300 lbs.	50-foot boom at 12-ft. radius	?
1005 CRAWLER	2½-Yds.	159,000 lbs.	50-foot boom at 12-ft. radius	?

KOEHRING HEAVY DUTY

*Figures available on request—ask your Koehring distributor for them.

KB20

Birdsboro-Buchanan Jaw Crusher

TISCO® helps Birdsboro-Buchanan Crushers

get more production without interruption

Jaw plates of TISCO Manganese Steel are used in Birdsboro-Buchanan Crushers because of the extraordinary property of this material of developing an extremely hard, abrasion-resistant surface in use under impact. This assures greater production with less down-time for replacement, indicating the value of TISCO Manganese Steel both for original equipment and for replacement parts.

Taylor-Wharton has made a specialty of alloy steels to resist impact and abrasion. Among the newer alloys developed by this company are TISCO 150-Y, a high chrome cast iron that can be heat treated to 700 Brinell, and TISCO 50. The latter is a heat hardenable medium manganese chrome molybdenum steel capable of hardness from 300 to 500 Brinell. Both alloys are strongly resistant to abrasion, where heavy impact is not present.

If your problem is one of impact or abrasion, or a combination of both, get in touch with us. When ordering replacement wear parts, order from manufacturer of the equipment and specify TISCO Alloys.

TISCO Manganese Steel Jaw Plates Assembled on a Swing Jaw for Birdsboro - Buchanan Jaw Crusher

Use TIMANG Weld Rods and Shapes for rebuilding and repairing wear parts.

TAYLOR-WHARTON Iron and Steel Co.

(Division of HARRISBURG STEEL CORPORATION)

HIGH BRIDGE 3, NEW JERSEY

Cincinnati, O. Birmingham, Ala. Easton, Pa.

One Grease One Gun

...that's all you need!

Simplify maintenance, and do a better job of it too! That's what you want, and that's what you accomplish when you switch to Sinclair LITHOLINE® Multi-Purpose Grease. This all-purpose lubricant enables you to cut service time to a minimum, and get lasting protection for all bearings and fittings. At all temperatures it's easy to use. Moreover, your grease jobs last longer because LITHOLINE resists water-washout, doesn't thin in summer heat, and won't oxidize and cake in bearing crevices.

What more could you ask than a proven "one grease – one gun" system of superior lubrication? There's less wear, no wasted time, and you save money. Call a local Sinclair Representative today for full information, or write for the new LITHOLINE pamphlet to Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. *There's no obligation.*

SINCLAIR LITHOLINE

Multi-Purpose Grease

In 11 years, 7½ million tons were hauled—at less than ½¢ per ton!

A large Southern cement company decided in 1942 to install a conveyor belt system to carry Portland cement rock (90 lbs. cu. ft.). This material had previously been carried by trucks over a 2¼ mile road at a cost of over 8¢ a ton. After 5 years of operation, the belt system had paid for itself, besides keeping the plant running without worrying about gas and tires for trucks throughout the war. Estimated cost per ton was less than ½¢!

The United States Rubber Company belts were used as follows:

- **Primary Crusher Belt (U. S. Matchless®)**
- **Secondary Crusher Belt (U. S. Giant®)**
- **Belt Line from Surge Bin (U. S. Giant®)**
- **Seven other "U. S." Belts, ranging from 929 feet to 2399 feet, up slope from quarry**

These belts ran an average of 40 hours to 84 hours a week, year after year.

The primary and secondary belts, plus the belt from the surge bin, are *all still on the job*. The other belts were replaced after 11 years and 1 month's service, and over 3000 feet sold to various sand and brick plants at $1.50 per foot. These belts were replaced by new "U. S." belts.

"U. S." Three-Way Engineering is responsible for such a remarkable performance. "U. S." belt engineers worked closely with the designers of the conveyor equipment and the engineers of the cement company. The result, as always, is the most efficient and economical belt for the job. That is why cost-minded plant operators call on "U. S." engineering and conveyor belt experience to solve any materials-handling problem. U. S. Conveyor Belting is obtainable through any of the 27 "U. S." District Sales Offices. Or write us at Rockefeller Center, New York 20, N. Y.

US RUBBER

Mechanical Goods Division

United States Rubber

Vital Industry Issues Discussed At Fall Meeting of N.I.S.A.

another ON THE SPOT report

THE semi-annual meeting of the National Industrial Sand Association, held September 20 to 23, 1955, at The Greenbrier, White Sulphur Springs, W. Va., was an ideal combination of business and relaxation. This outstanding resort is equipped with excellent facilities for the many conventions which hold their meetings there. As usual, the attendance at this convention was excellent, and the industry matters discussed were of unusual importance. Featured were talks by Paul E. Gurske, director of the Bureau of Labor Standards, U. S. Department of Labor; Theodore C. Waters, N.I.S.A. counsel; Charles A. Horsky, associate counsel; John T. Sapienza, tax counsel; Theodore F. Hatch, Industrial Hygiene Foundation, and others.

Much important information on workmen's compensation was contained in the address by Mr. Gurske. He first gave a brief history of our first form of social insurance, the first state laws to test its constitutionality having been enacted in 1911. He also pointed out some of the present-day weaknesses of our workmen's compensation laws and what the Bureau is doing to help the states to strengthen their laws.

Social insurance gained widespread support in the early years of the century because the shift from an agricultural to an industrial society was made at a high cost of the lives and limbs of the workers unused to machinery. The courts, working with the common law rules of that era, were unable to give justice in the overwhelming majority of the cases. Workers lost out in 80 percent of the cases, and even if they won, most of the money went for legal fees, etc.

Mr. Gurske traced the adoption of workmen's compensation laws in Germany in 1884, in Great Britain in 1897, in Canada in 1902, and then in this country beginning in 1908. Mississippi, in 1948, was the last state to adopt such laws. These laws, he said, cause accident costs to be part of the cost of the product and make it profitable for the employer to promote safety. These laws are intended to give the worker a living income while recuperating; but the average compensation is only 40 percent of wages. There are also 12,000,000 workers who are not protected, and some occupational disease coverage is still incomplete.

The Bureau, said Mr. Gurske, has set goals to guide the states, and its model new act is designed to combine the best provisions found in all state laws. It is hoped that the various states will adopt the best provisions in the laws of the others. A good workmen's compensation law, he said, should provide a worker with the best of care in order to put him back to work; and it should protect his family.

Some of the goals of the bureau are as follows: broad compulsory coverage of employers of one worker or more, including agriculture; complete coverage of occupational diseases with no limitations; adequate cash benefits; unlimited medical care; second injury funds; prompt and compulsory reporting of all inseases.

Theodore C. Waters, association counsel, Miles & Stockbridge, Baltimore, Md., in discussing *Trends in Workmen's Compensation Legislation,* said that intelligent management must recognize that the Federal Department of Labor has an important role to play in the field of labor legislation, which is here to stay. Industry must work with the government to find some solution to the problems incident to employer-employee relationship. One of the most important phases of that relationship, he said, deals with compensation for industrial injuries. He outlined three major aspects of this subject.

In discussing the basic recommendations made by the Undersecretary of Labor, Mr. Larson, he stated that these involve a changing concept in workmen's compensation which would ultimately lead to the payment of compensation for wage loss sustained by employees due to any industrial injury, irrespective of the cause. This result, he said, is not objectionable, except that administration of the law might lead to the demand that industry pay for *all* injuries, even those not connected with the job. The burden of proof would rest upon the employer to show that the injury did not arise in the course of the work; or that the extent of the injury was less than that claimed. In cases where administration is not competent, this situation might result in awards being made to cases with no merit, to the prejudice of other cases where compensation payable is inadequate for the injured employee.

Mr. Waters also made brief reference to the five general purposes in the program of the Department of Labor. With respect to the elimina-

At the head table during the N.I.S.A. annual dinner were Junius M. Strouss (Deckers Creek Sand Company); Emery M. Durstine (Keener Sand and Clay Company), vice-president; Mr. and Mrs. Clarence R. Wolf (New Jersey Silica Sand Company), president E. J. and Mrs. William J. Cannon (Nugent Sand Company), treasurer; Mr. and Mrs. Vincent P. Ahearn, executive secretary. In the foreground (second from the left) is Mrs. E. J. Campbell (Sun Sand Company); at the right are Mr. and Mrs. Arthur B. Schlesinger (New Jersey Pulverizing Company).

tion of scheduled coverage for occupational diseases, he agreed that all truly occupational injuries should be covered. He pointed out, however, that there are peculiar problems applicable to some of the disease injuries, including pneumoconioses, dermatoses, impairment of hearing, cancer, and heart disease. The effect of exposure in previous employment, of age, and of contributory diseases enters into these cases. The problem, he pointed out, is further complicated by the difficulty of proper medical diagnosis and evaluation of disability. He urged that some time limit be established on such claims.

According to Mr. Waters, only one or two states pay compensation based upon two-thirds of the employee's average weekly wage, with no ceiling on the amount so paid. Such provisions, he said, encourage malingering and may impose staggering additional costs upon the employer. He opposes any material increase in death benefits, but is in favor of unlimited benefits for medical care and hospitalization. Administrative agencies should be on the watch for any abuses that may have grown up with this system, he stated, especially with respect to the manner in which some doctors have handled compensation cases.

With respect to practical considerations for engineering control, Mr. Waters said that without such control perfection is not possible. He praised the industry for the progress it has made in this direction but urged more intensive efforts on the part of management, as such programs must start at the top. The recent conference with the Industrial Hygiene Foundation in Pittsburgh, he said, was very gratifying, as it got down to the practical level of a mutual exchange of information and ideas for the control of hazards.

In commenting on the proposed medical program for members of N.I.S.A., Mr. Waters urged the desirability of each member-company charging some individual on its staff with the responsibility of carrying out the program. He approved the objectives of this program—(1) to weed out prospective employees who may be poor risks, and (2) the accumulation of medical information. The forms to be used should be as simple as possible, but they must be complete. The choice of a physician is highly important. An effective program cannot be bought; it can only be built.

There is too little co-operation between companies and their insurance carriers with respect to the disposition of compensation claims, Mr. Waters believes. He stated that contacts should be established with the carriers, and that their advice should be solicited on both engineering and medical problems. When claims are filed, management should also let the carrier know of the firm's interest in the disposition of such claims. Records should be kept which will serve as defense against improper claims. Any company which has adequate engineering and medical programs will have few problems with respect to the procurement of insurance coverage. In closing, Mr. Waters urged that every producer re-examine his program and see that the job is done properly.

Vincent P. Ahearn, executive secretary (center), flanked by P. W. Palmer, a former member (left), and I. C. Waters, association counsel (right).

In discussing the importance of labor management relations in collective bargaining, Charles A. Horsky, associate counsel for the Association, reviewed the history of the guaranteed annual wage. The first such plan was put in effect in 1890, and the type now extant goes back 12 years to the time when the steelworkers union asked Big Steel for it. Although this plan was turned down then by the War Labor Board, it recommended that a study be made of existing plans and that these plans be tied in with unemployment compensation.

According to Mr. Horsky, the plans agreed upon last summer by Ford and General Motors with the automobile workers, and later by the can companies with the steel workers, will serve as models for other plans. The Ford and GM plans, he said, operate under a system of trust funds. In the General Motors plan it was provided that payments will begin in June, 1956, if (1) the Labor Department issues a ruling that the amount paid by the company into the fund is not a part of the regular pay; (2) the Bureau of Internal Revenue rules that the amounts paid are business expense and deductible; and (3) the states in which at least two-thirds of the company's workers are located will not interfere with unemployment compensation, provided that the company includes it in the plan. This plan is financed by General Motors at the rate of 5 cents per hour for hourly workers, with a fund ceiling of $400 per employee.

At Ford the ceiling is $343, and at the can companies it is $185, based on the past employment experience of each industry. The contracts, said Mr. Horsky, provide that the amount of the fund may be reduced if the average weekly amount paid goes down. This provides an incentive to get the states to increase their unemployment compensation. The Ford and General Motors plans pay 65 percent of the average weekly wage for four weeks, and 60 percent thereafter. Mr. Horsky suggested that producers check their own layoff pattern and records so that they will be available if demands are made.

The only recent change in the Wage Hour Law, according to Mr. Horsky, is the increase to the $1.00 minimum. The real pitfall, he warned, is the question of exemptions. The title of an employee is not important; the classification he actually fits in is the deciding factor.

With respect to group bargaining, he said, it has been decided that when bargaining jointly, it is permissible for all to shut down as a group when one company is struck. This prevents the union from singling out the weakest member of a group.

In discussing percentage depletion, John T. Sapienza, tax counsel for the Association, reported that the proposed regulations are not yet out and advised producers to go ahead and interpret the law as they have been doing. Bill HR4847 is of interest to those on a fiscal year basis. This bill may be passed in 1956; and producers were urged to do what they can to help. A recent amendment to the regulation on aggregation of mineral interests allows three months after the final regulation is out to reconsider an election already made.

Mr. Sapienza also advised that any taxpayer having a controversy with the Bureau of Internal Revenue take his case to the Court of Claims, rather than the Tax Court, and that he pay the deficiency and later claim a refund. Mr. Sapienza pointed out that in spite of the fact that decisions in two industries have upheld the in-

clusion of all processing for percentage depletion purposes, the government does not accept this for other industries and these industries apparently will also have to carry their cases to court. He stated that any company can file a claim for a refund; and if this is denied, it can go to court. The case can then be held in abeyance indefinitely to await developments. Mr. Sapienza cited recent rulings in other industries and pointed out that interpretations of the rulings vary with individual agents.

Theodore F. Hatch, director of research, Industrial Hygiene Foundation, Pittsburgh, pointed out that the pre-employment medical examination is as much for the protection of the men as for the employer. He advised a routine re-examination every six months and stressed the importance of retaining a doctor really familiar with silicosis and its causes and preferably familiar with the men. Conducting a routine dust measurement program in a plant, he stressed, not only warns of measures to be taken; it also has a good moral effect on the workers. The respirator is a poor answer to the dust problem, and should be used primarily as an emergency measure. Where respirators are necessary, however, each man should be provided with two for his exclusive use. The company should tell the employee why they are necessary, should instruct him in their use, and should keep them clean and effective.

According to Mr. Hatch, there has been little change in the effectiveness of the dust control methods in the silica sand industry since the study was made in 1946. The effectiveness of dust control is convincingly demonstrated by the experience of a company in Australia, which started a program in 1922; it has had no new case of silicosis since that time.

Mr. Hatch stated that the first requirement of a good program is a conviction at the top that dust control is needed; and that this must go down through the organization. The plant cannot always be made perfectly dustless, and any deficiency must be compensated for by care and an adequate training program. In closing, Mr. Hatch commented on the success of the June conference and suggested a one-week school on the designing of dust-control equipment into the plant.

Reports of the various committees were presented at this meeting. Earle T. Andrews, chairman, gave a progress report of the advisory committee on health. He also said that the industrial hygiene forum was well attended and will be repeated.

William J. Cannon reported on recent developments in sand reclamation. Only one or two of the many reclamation processes in use are practical, and even these only where freight rates are high; but in spite of this fact, new installations are being made.

William D. Chadwick, chairman, gave a progress report of the committee on fineness and grading of foundry sands. It is planned to get up a tentative standard of clay determination on carbon-bearing sand and a sampling process report is to be ready soon. The American Foundrymen's Society, it was stated, has asked the committee to write a chapter on joint testing and to set up a standard on procedure for its new handbook.

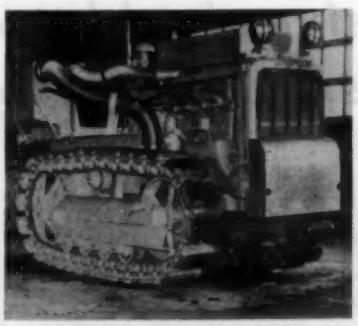
In discussing *Measurement of Size and Grading of Sand,* Stanton Walker, consulting engineer for N.I.S.A., said that grading is as important in foundry sand as it is in concrete. He pointed out the difficulty of grading sand by a number, and submitted that it is better to give the percentage in the various size brackets. Twelve sizes can be used, but even six present innumerable combinations. According to Mr. Walker, the 50 gm. sample now standard is too small to be representative. He also pointed out the wide tolerances of sieves, especially in the finer sizes, which make close tests almost impossible.

Mr. Walker also discussed the various graphs being used to interpret sand gradations and pointed out their respective merits. Above all, he recommended a tri-axial method which can simply and accurately blend sands to a desired gradation. It can also be used to deduct fractions to make a desired sand from another.

In his annual Washington Report Vincent P. Ahearn, executive secretary of the Association, reviewed recent developments in Washington and commented on possible future developments. The President, he said, did an excellent job of working with an opposition Congress. The highway program was lost, but this was the largest peacetime appropriation ever asked anywhere. The Taft-Hartley law seems to be a closed issue—even the unions don't want to reopen it; and the liberalization of the immigration laws is also dead.

Next year's issues, according to Mr. Ahearn, will include public *vs.* private power, and a balanced budget plus highways *vs.* reduced personal income taxes. He predicted that Congress will expand and liberalize Social Security, which no Congress can henceforth ignore, and that a highway program and more flood control legislation will be passed. The proposed AFofL—CIO merger, he believes, would be a serious threat to the Republican party; it couldn't deliver the labor vote, but it would strengthen the Democratic vote.

In closing, Mr. Ahearn stressed that our big problem is to find the most competent men to hold high posts in our government, which is becoming so complex that our best "brains" are needed. In order to achieve this end, we must make public service an honorable calling. He pointed out that our top business men must sacrifice too much to take public decision-making jobs; they should be given only advisory positions, and the top jobs should go to career men of high caliber who have been trained for this work, men to whom the top jobs are not now open.



• This Caterpillar D2 Tractor was recently approved for non-coal underground mines by the U. S. Bureau of Mines. The unit uses a National Mines Service Company conditioner, which lowers exhaust temperatures to 160 deg. and removes some of the water soluble aldehydes.

N.S.G.A. Board

(*From page* 113)

(2) That federal taxes on motor fuels be increased 50 percent;

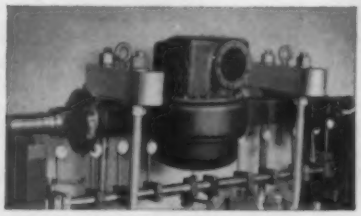
(3) That the Federal Government share on the interstate system be 90 percent and that of the states 10 percent, with credit to the public land states—and that these federal funds be apportioned among the states on the basis of need;

(4) That for the other systems, the historical formulae as to apportionment and matching be retained;

(5) That the authorization bill include no restrictive provisions which encroach upon state sovereignty nor any provision whatsoever for financing; and

(6) That the standing committees of the House and Senate forge out the detailed financial plan with a separate bill.

Matched to your toughest conditions. Steep grades! Heavy loads! Muddy going! Every adverse condition is duplicated in our "Torture Chamber" to produce axles that can "take it". Stock axles are picked at random and subjected to the equivalent of a "chuckhole" shock every 4 seconds, 24 hours a day, for months on end. Another test simulates an uphill pull 3,000 miles long. Only tests as rugged could produce axles so tough.



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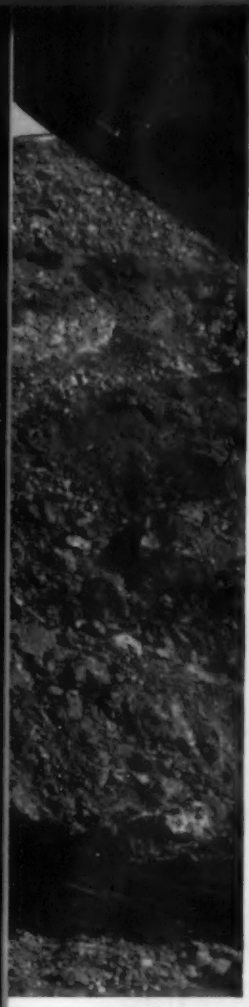
Tailor-made power exactly to your trucking needs with Timken-Detroit!

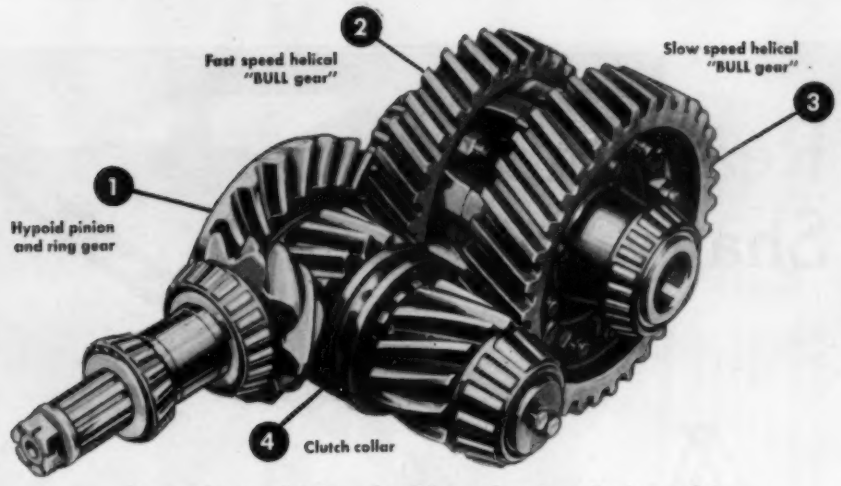
Unequalled flexibility! TDA 2-Speed Axles, give an almost *unlimited* choice of gear ratios. The Timken-Detroit design is so simple and basic, that an ordinary mechanical change lets you tailor power exactly to your trucking needs. Where other 2-speed axles limit you to only a single gear spread of 37%, TDA offers a range all the way from 28% to 49%.

TDA meets varied needs! The variety of hauling conditions that today's trucks must meet call for maximum speed and power flexibility. Other 2-speed axles are just too limited to meet this need. On the other hand, TDA's simple double reduction design gives complete flexibility. Gear ratio can be easily changed without weakening the axle unit in any way.

How you benefit! TDA not only gives you a much wider power range, but also, all the advantages of a stronger, sturdier, smoother operating design. Since helical "Bull" gear sets operate independent of one another, there is no overheating even after indefinite running in low speed. Bigger huskier TDA parts last longer, stand up better under tough usage.

Less down-time, longer axle life, fewer repairs, higher fuel economy, lower operating costs and higher profits. These are some of the important reasons why so many leading manufacturers and operators everywhere specify Timken-Detroit 2-Speed Axles.





How the exclusive double-reduction design of

TDA 2-SPEED AXLES

gives you greater speed, endurance, and economy!

This is HOW TDA's 2-Speed principle works! A husky hypoid ring gear and a bigger, stronger pinion set (No. 1 in illustration above) provide the *first step* of the total gear reduction for both fast and slow ratios. Two large, heavy-duty helical gear sets provide the *second step*. Both sets are of balanced size and capacity. One set (No. 2 in illustration) is for fast speed; the other (No. 3) is for slow speed. The clutch collar (No. 4) moves to right or left to engage one helical pinion or the other.

WHY this principle offers far wider spread! Because the TDA design is so simple, the ratio may be changed merely by changing the low speed helical gear pinion. Unlike ordinary designs which are limited to 37%, TDA offers spreads of 28%, 37%, and 49%. In effect, this flexibility gives you your choice of power ratios to exactly match your needs.

Greater endurance, longer truck life with TDA. TDA's simple design eliminates small complicated parts and midget size gears. Large hypoid helical design gives more teeth in contact – quieter operation and far less strain. Bearings are larger, too. Helical "Bull Gears" not in use idle, further reducing wear. All this adds up to longer engine life... and more efficient and profitable operation under all conditions.

THE FIRST 2-SPEED AXLE

gives TDA world's widest

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TIMKEN-DETROIT AXLE DIVISION
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World's Largest Manufacturers of Axles for Trucks, Buses and Trailers

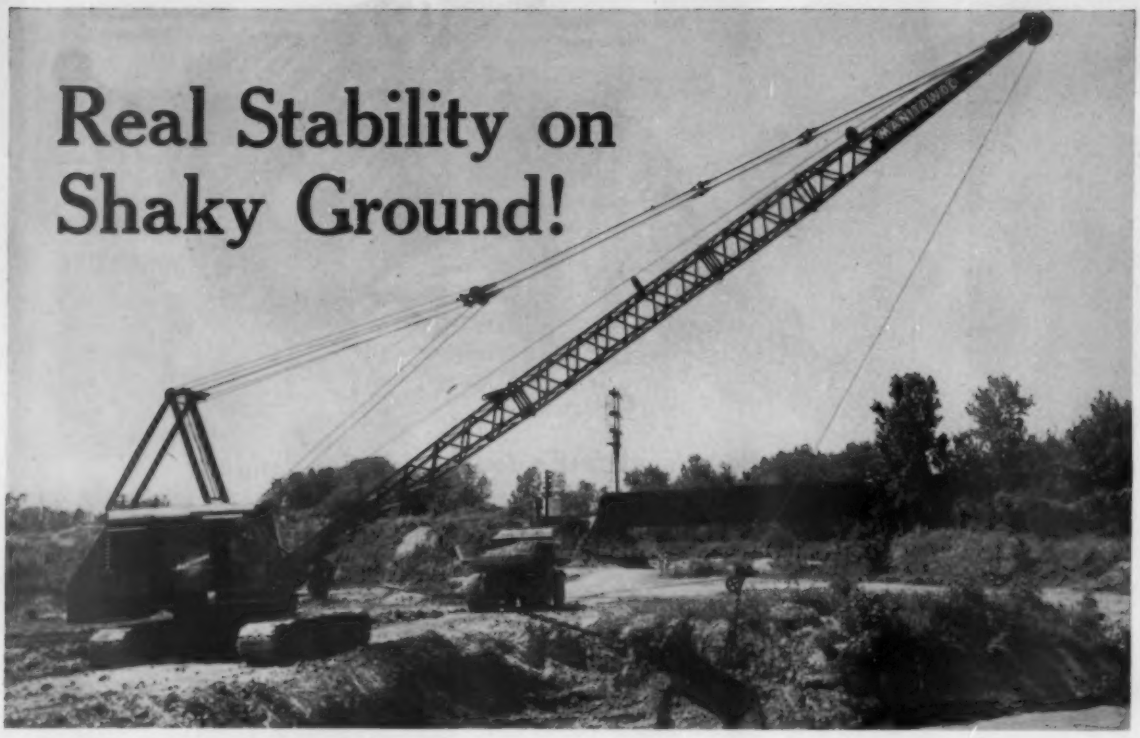
Plants at: Detroit, Michigan • Oshkosh, Wisconsin • Utica, New York • Ashtabula, Kenton and Newark, Ohio New Castle, Pennsylvania

Increase axle life with
GENUINE TDA EQUIPMENT PARTS

Take no chances with ordinary replacement parts. For sure, dependable factory-type jobs, specify genuine Timken-Detroit axle parts kits—identical to your axles' original equipment.

Each kit is complete — gives you everything you need in one handy package. Gaskets and shim parts, brake liners, steering knuckles, differential gears — for every size of brake and axle. Order by number from your dealer. Cut labor and adjustment costs. Get trucks back on the road quicker.

Real Stability on Shaky Ground!



Manitowoc Lower Works Design Provides Greater Stability on Treacherous River Bank

Arrow Sand and Gravel Company of Columbus, Ohio has the ticklish job of taking stone from an open pit near the Scioto River while working from the unsteady river bank. The job site is located directly across the river from the Columbus water filtration plant.

Because of the difficult footing, Arrow chose a Manitowoc dragline having the positive stability needed for full boom reach without imposing undue pressure upon the river bank during bucket return. Equipped with a 4-yd. bucket and an 80′ boom working at an 85′ radius, their Manitowoc 3900 dragline completely fills two 15-yd. trucks with stone in just five passes each.

Due to the Manitowoc's remarkable stability, the hook rollers never even touch the top flange of the ring gear during dragging and loading operations. These adjustable hook rollers at the rear almost double the effective diameter of the roller path by reducing roller loads. Machine stability is assured no matter what front end equipment might be used.

Other features contributing to the Manitowoc 3900's greater stability: 20′4″ long crawlers — spread wide — provide low ground pressure; a simple, alloy steel carbody totally enclosing travel shaft clutches and gears; and an extremely simple drive with dependable jaw type steering.

Clean, efficient design throughout means greater speed — more cycles per working day. The Manitowoc has only 14 gears and only working gears turn. This direct power flow gives top line pull and speed with fewer parts. Smooth, disc-type swing and travel clutches and air controls make the job easier for any operator — assure precise bucket control.

TORQUE CONVERTER makes uneven load handling a thing of the past. Smooth, steady power causes bucket to dig and settle on the return for a full capacity load. All hoisting operations are by accelerator control only, resulting in uniform performance. Oil cushion absorbs all shocks.

Put a Manitowoc to work in *your* quarry or pit. Smart operators settle for nothing less in peak performance, smooth operation and long working life. Full details and specifications from your Manitowoc distributor. MANITOWOC ENGINEERING CORP., MANITOWOC, WIS.

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Harbison-Walker's New Silica Refractories Plant Makes Conventional and Super-Duty Types

An air view of the plant of Harbison-Walker Refractories Company at Leslie, Md. This facility, 33rd in the Harbison-Walker chain, will turn out silica refractories. It is the latest addition in the firm's $35,000,000 expansion program, launched in 1951.

DURING 1951 and 1952 the tremendous expansion in the steel and other industries necessitated a corresponding increase in the output of refractories. To meet this need, the Harbison-Walker Refractories Company embarked upon the greatest expansion program in its history. This program, which cost more than $35,000,000, and affected all of the company's products, included the construction of a new silica refractories plant at Windham, Ohio, and another at Fairfield, Ala.

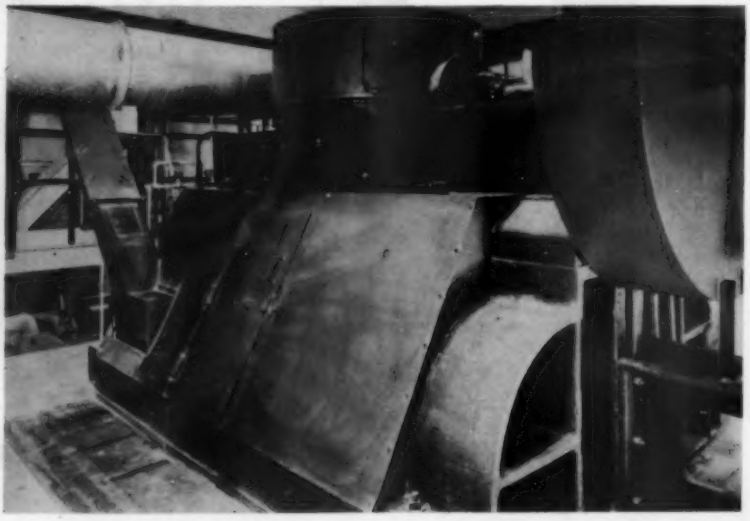
A new fireclay brick plant was erected at Fulton, Mo., and a basic brick plant at Marelan, Quebec. Other silica and fireclay brick plants were completely modernized and substantially enlarged. Plants at Baltimore, Md., and Warm Springs, Calif., have added greatly to their capacities to produce the basic refractories magnesite, chrome, and forsterite.

In 1954 the company purchased a large deposit of fireclay near Ohiopyle, Pa., a plant at Grantsville, Md., for the production of fireclay refractories. Construction of a new plant for the manufacture of silica refractories at Leslie, Md., was begun in 1954 and completed early in 1955. In June, 1951, the company was operating 18 continuous tunnel kilns. The number has now increased to 29, with one additional kiln under construction at Marelan, Que.

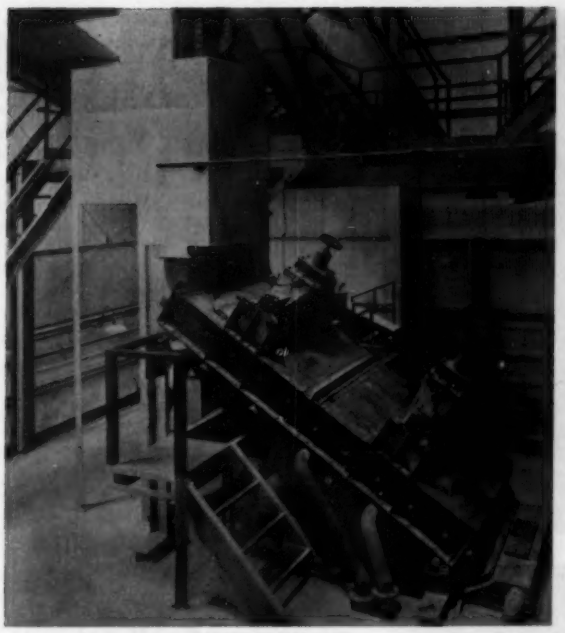
In the new Leslie plant, as at the one at Windham, Ohio, two types of silica refractories are manufactured, Star brand of the conventional type, and Vega brand of the super-duty type. These products are used in by-product coke ovens, open-hearth and electric steel furnaces, glass tanks, and furnaces of many kinds employed in the refining of copper and other nonferrous metals.

The plant site was carefully selected for its closeness to raw material and to important consuming industries. Raw material originates in a quarry a few miles from Leslie. Consumers are mainly located in the vicinity of Baltimore, eastern Pennsylvania, and other coastal points.

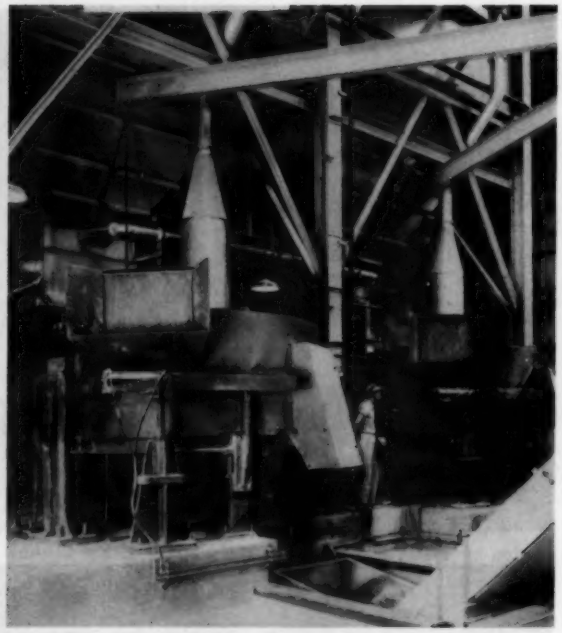
The new facility is located approximately half way between Baltimore and Philadelphia and is well situated for both railroad and truck shipments. Construction was completed in 1955. All engineering prerequisites were jointly determined by the operating, mining, and engineering departments. The latest operating techniques and laboratory developments are incorporated in the operation without sacrificing the latest improvements in machine design. Mechanical and electrical controls in every stage of the manufacture are simple and safe, assuring uniformity of product, maximum protection against occupational hazards, and fine working conditions.



Output of this totally-enclosed dry-pan grinding mill is sized and conveyed to bins or to the ball mill for fine grinding.



The screening unit in the dry-grinding circuit. Note the piping for dust collection.



Mixing equipment includes two 9-ft. diameter mixing pans.

The Leslie plant is the third silica brick facility built by Harbison-Walker since the introduction of Vega brand super-duty silica brick during World War II. This super-duty silica brick can be manufactured at the same time as the conventional type Star silica brick. Although the greater portion of the brick is manufactured by the power press process, a part of the production is manufactured on a machine of the company's own special design —the impact press.

All of the raw material is received at the plant by dump trucks. It arrives washed, beneficiated, sized, and carefully selected for quality control. The trucks climb a 20 percent graded ramp and deliver the material into a large receiving hopper or onto adjacent stockpiles. Since the raw material is moist as received, virtually no dust is created during unloading. An apron feeder and belt conveyor deliver an electrically-controlled flow of the silica pebbles to the grinding plant. Calcines are handled by lift truck through a jaw crusher onto the same electrically-controlled conveyor system. The units are self-emptying and adequately protected by signal systems to assure operational simplicity.

Hydrated lime, used as the bonding agent, is delivered to the plant in sacks of the exact weight required per batch. It is received, palletized, and stored by lift trucks. This material and other binders can be received with equal convenience either by railroad or truck.

Raw material is fed by an apron feeder and belt conveyor to a totally-enclosed dry-pan grinding mill. The product from this mill is separated by an electrically-vibrated screen into fractions of several sizes, as dictated by the particular mix required. The sized material is distributed by rubber-lined chutes or conveyors to the various compartments of the ground-material bins. A portion of this material is fed to a ball mill by means of a constant-weight feeder for fine grinding. The ball mill is controlled by an electric ear and delivers its material to the fine-ground material bins.

The dry pan, ball mill, and material handling equipment are completely enclosed and are connected to a bag-type dust collector.

Two identical batching systems control the proportion of materials being readied for the mixing cycle. The coarser materials are withdrawn from the bins through cut-off gates into a sensative weigh hopper and the fine materials are withdrawn by means of electrically-operated rotary valves. This system is completely enclosed to control the dust and to improve working conditions.

From the weigh hoppers the various materials are introduced into two mixing pans of modern design 9 ft. in diameter. Each of these has a rotating pan and stationary mullers and scrapers. The sequence of feed to the pans is carefully controlled, and the mixing time is very important in proper preparation of the material for molding. At the end of the mixing cycle the contents of the mixers are discharged by means of disc empties into skip hoists, which deliver the material to receiving hoppers above the presses.

The power presses and the impact press may be fed either automatically or manually by means of carefully-controlled reversible belt feeders from the skip hoist hoppers. It is possible by means of this system to feed the material used to any or all of the presses. A separate hopper over each press is of sufficient capacity to receive more than a skip hoist load, thus allowing the mixes to be changed during operations. This hopper feeds each press by means of a belt feeder controlled by the quantity of material in a weigh hopper above the presses.

Pressed brick are delivered from the press by means of standard pushers or by mechanical pickers. The operator transfers the brick from the press to rack cars, which in turn are handled by lift truck operators to and from the rack car dryers.

Rack cars loaded with brick are introduced into a dryer containing six tracks 125 ft. in length overall. After a car is placed in the dryer, the train of cars is pushed hydraulically. The movement of cars through the dryer is in accordance with a carefully predetermined

One part of the raw materials distribution system, which is also equipped with piping for dust removal.

Brick made on this power press are transferred to rack cars, to be taken by lift truck to car dryers.

Racks of unburned brick on tracks, waiting to be pushed hydraulically into the dryers. The drying process is regulated by a carefully predetermined schedule.

schedule. The dryer is supplied with clean hot air from the cooling zone of the kiln, and a system of fans and ducts insures a uniform movement of warm air throughout the complete cross-section of the six tracks. Indicating and recording instruments are used to observe the temperature and humidity conditions throughout the length of the dryer.

The Leslie tunnel kiln is the seventh built by Harbison-Walker for burning silica brick, and the 29th put into operation in a company plant. It was completely designed by Harbison-Walker's engineering staff, whose members took full advantage of the experience of the operating department in working with the six other Harbison-Walker silica kilns. The Leslie kiln is 504 ft. long; it holds 61 cars, and has a load cross-section of 8 by 5 ft. The cars are pushed through the kiln continuously.

This kiln is equipped to burn heavy or Bunker C oil heated by high-pressure steam in the oil tanks. The oil lines are traced throughout the system by means of steam lines which are wrapped together and insulated. Hot air at approximately 70 deg. F. is delivered to the burners from the cooling zone of the kiln for combustion.

Groups of burners are zoned to allow for ready adjustment. They are designed to burn steam-atomized Bunker C oil or air atomized No. 2 fuel oil. All of the air entering the burner must pass through it as the units are completely sealed against the introduction of free air from the room or leakage of hot gases from the kiln if the latter is being pressure-fired.

For use in start-ups and for rapid recovery from work stoppages, the kiln and boiler are completely equipped to burn No. 2 fuel oil contained in a 15,000-gal. standby tank.

The kiln is carefully insulated to prevent excessive heat loss through the walls and crown, and the insulation is varied to suit the temperature in any section of the kiln and still maintain an outside surface temperature of less than 200 deg. F.

The entrance end of the kiln is equipped with a double door and a vestibule system to prevent disturbance of the draft during the charging operation. The kiln is charged at regular intervals—24 hours a day, 7 days a week.

Both thermocouple and radiomatic instruments are provided for measuring temperatures. These recording and direct-reading instruments provide the information which permits the operator to set up any desired burning curve, and by adjustment of individual burners to secure uniform heating and cooling conditions throughout the length of the kiln.

Both the tunnel kiln cars containing unfired or green brick and those containing burned brick are handled throughout the plant by means of transfer decks and electrically-driven locomotives. These d.-c. driven units allow for speed variations within the widest possible practical limits.

Tunnel kiln cars containing the burned brick are delivered to unloading stations adjacent to the stock shed, and the brick are unloaded at this point onto pallets handled by lift trucks. Through careful planning, the one-level plant provides for lift truck travel throughout, and permits easy handling of the palletized brick into storage, or delivery into railroad cars or trucks.

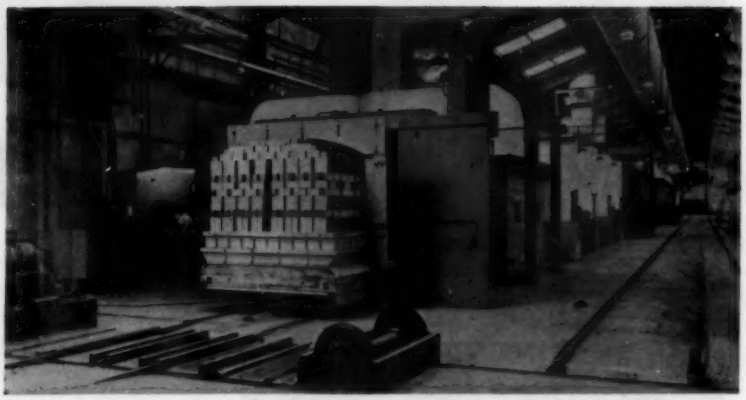
Fired brick are carefully inspected by the operators as they are taken off the kiln cars and loaded onto the pallets. The major portion of the product is shipped palletized by railroad car or motor truck after another inspection. Some of the brick, as required, are packed in one of several packing materials, or they may be crated for rail and water export shipment.

An adequate paved road system allows easy entrance of trucks onto a concrete loading apron or for direct entry into the plant for loading by lift trucks. This is in addition to facilities for loading onto railroad cars through doors spotted along the railroad siding.

As in all of the firm's modern silica brick plants, special attention has been paid to dust control. All of the equipment is completely enclosed and connected to a modern cloth bag-type collecting system which in turn discharges the dust into the Star ball mill fines bin. In addition, for noise and dust control, the grinding department is completely enclosed.

It is planned to install adequate high-vacuum portable units for general and spot clean-up throughout the operation.

During the firing of silica brick, a permanent increase in dimensions occurs, amounting to about 15 percent by volume. The expansion results from the transformation of the silica mineral quartz into other crystalline forms of silica. Completion and control of this expansion, without damage to the ware, requires extended time, as well as careful temperature control; and this is the primary reason for the great length of the silica brick tunnel kilns.



A loaded kiln car entering the tunnel kiln, which is operated 24 hours a day, seven days a week. The entrance is equipped with a double door and a vestibule system. At the left are the control instruments.

The thorough quality control program at Leslie is the same as that in effect at all other Harbison-Walker silica brick plants. At all stages of the manufacturing process, samples are regularly taken for immediate testing in the quality control laboratory. Brick are tested at the plant by competent laboratory technicians with complete laboratory facilities, and additional tests are conducted regularly at the company's central Research Laboratory at Hays (Pittsburgh), Pa. It was at this laboratory that the refractories industry's first spectrograph was operated for control of the alumina and alkali content of silica brick.

It is well known that the main industrial health hazard in any plant processing free silica material is "silicosis", resulting from the inhalation of silica dust. The company's dust collection facilities, however, reduce this hazard to negligible proportions.

Extensive investigations of the McIntyre Research Foundation of Toronto, Canada, have been responsible for the widespread adoption of powdered-aluminum prophylaxis as a preventive for silicosis. Harbison-Walker was the first industrial organization of any kind in the United States to be licensed by the McIntyre Research Foundation to administer the treatments. This was at the Hays plant in 1943. The aluminum prophylaxis program is used at the Leslie plant.

S-D Day Campaign Planned By National Safety Council

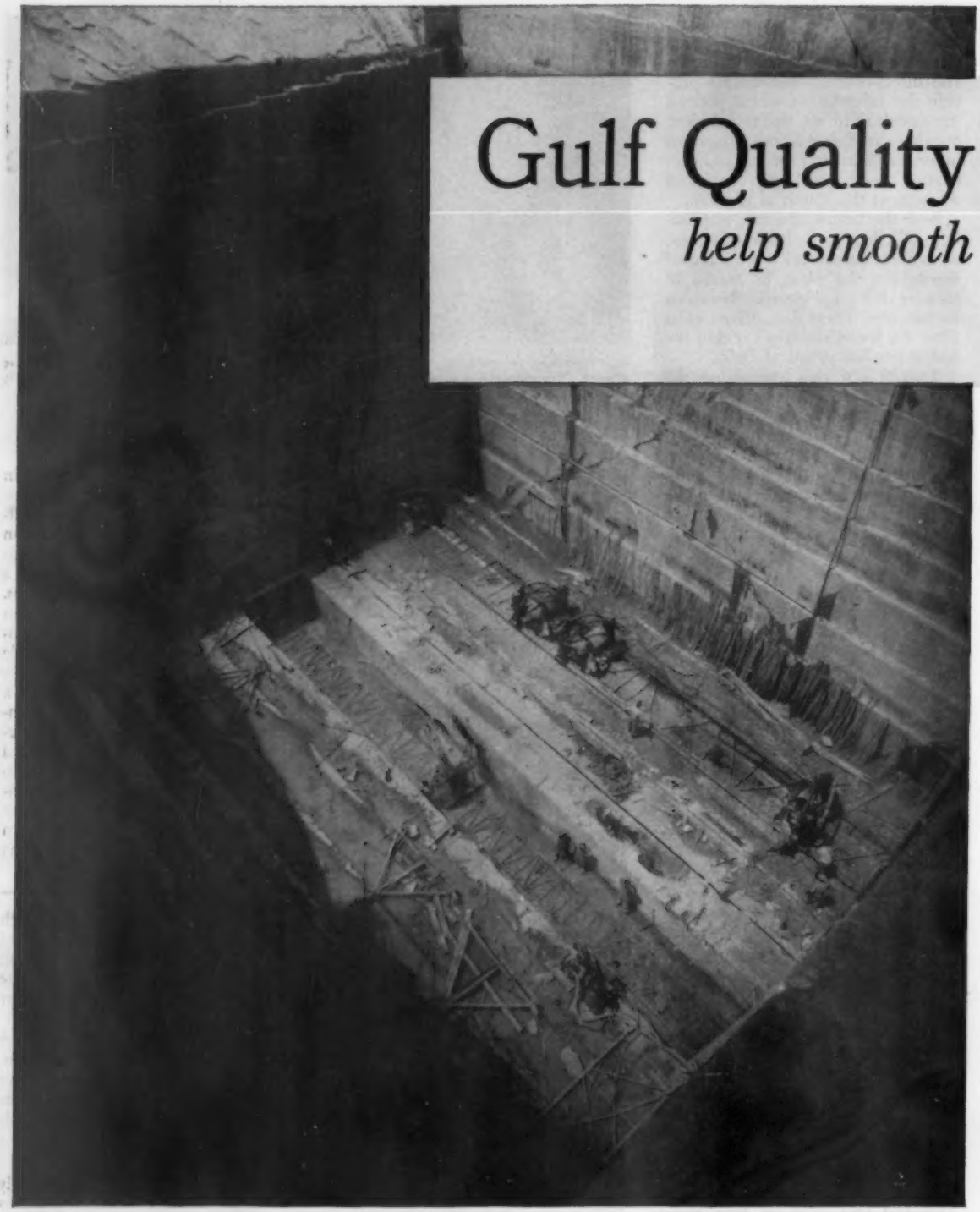
S-D Day—Safe Driving Day—has been announced for December 1 by the President's Committee for Traffic Safety. The objective of S-D Day, which includes an intensive ten-day advance and ten-day follow-up campaign, is to demonstrate that traffic accidents can be reduced materially when all drivers and pedestrians accept individual responsibility for accident prevention.

Through their active support, business and industry can help make the S-D campaign a success, and can render a public service to the community.

To assist companies in publicizing S-D Day, kits have been prepared which include posters and displays for use in plants and places of business, lapel tabs, buttons, armbands, and gummed stickers for business correspondence. Companies with fleets should remind their drivers of S-D Day with pressure-sensitive dash stickers and spread the word to the general public by means of bumper strips.

The kits, together with information on imprinting and quantity prices, may be obtained by writing on an organization letterhead to the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Modern Arc Welding, a recently published 200-page volume, contains information of value to persons designing parts for fabrication by arc welding, as well as to welding operators. It is written in popular style and illustrated with photographs, charts, and diagrams. Price, $1 per copy. Apply to the Hobart Trade School, Inc., Hobart Square, Troy, Ohio.



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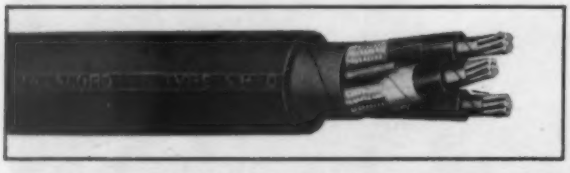

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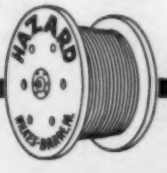

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Preparing for AUTOMATION

By EDMUND BURWELL ILYUS, P.E.
Consulting Engineer

AUTOMATION — a contraction of *automatic operation*—is becoming more and more a necessity for successful and profitable operation of any industry. With the impending increase in minimum wages and the demands made by labor for a guaranteed annual income, management must take steps to insure the minimum return on investment and a guarantee of an annual return. Labor cannot obtain the benefits it is demanding unless management finds a means of providing these benefits, plus a return for the financial risk involved.

By means of automation, machinery performs and automatically continuously controls manufacturing operations from raw material to finished product. Included are automatic materials handling; control; programming of operations; and compilation, recording, and evaluation of data. The final objects are (1) balanced production, (2) uniformly controlled quality, and (3) lower costs.

Automation was born in 1783, when Oliver Evans built his flour mill and incorporated conveying equipment. Other forerunners of today's automation were Eli Whitney, who first used standardized and interchangeable parts in the manufacture of muskets in 1789, and Henry Ford, who adapted the packing house production line to the manufacture of automobiles.

During the current century the gigantic strides in mechanical equipment and the tremendous impetus of World War II to the development of electronic controls have made the substitution of machines for manual labor practical, and have also provided a means to substitute electrical controls for human judgment.

This question is often asked: "Is automation practical — out of the dream stage?" The answer is most definitely, "Yes!" Automation is here today. Its principles and techniques are being used with proven success and increasing advantages in the steel, food, oil, and automotive industries, as well as in metallic and nonmetallic mining.

The advantages of automation may be summed up as follows: (1) it increases the output per worker; (2) it reduces the unit manufacturing cost; (3) it improves and controls quality; (4) it reduces spoilage; (5) it helps raise the average standard of living; (6) it will increase profits.

Due to rapid technological developments, management must determine now where it wants to be in the next five, ten, or more years. By that time equipment now undreamed of will be commonplace. Those with foresight are planning right now for automation, whether complete or partial. Because of the relatively higher labor and manufacturing costs incurred without automation, practically every industry can afford it, if the product can be produced by automation.

Most plants which are operated with complete automation started in a step-by-step fashion with partial automation. All of the components, such as conveying equipment, instrumentation, mechanical, electrical, and electronic devices are available; but to meet existing and future needs they must be carefully selected and wisely engineered into each installation.

Automation has its effect on personnel—all to the workers' advantage. It eliminates drudgery, frees the worker from monotonous tasks, and requires him to think and use his higher skills. Where the idea is properly presented, employees are usually quick to see the benefits of increased sales, greater employment, and safer, more comfortable, interesting, and satisfying jobs. It is hardly necessary to mention the higher living standards following technical advances.

Since a great proportion of automatic controls, as well as power, is electrical, the distribution system in the plant must be adequate. This, therefore, is the starting point in preparing a plant for automation.

Probably the most neglected and poorly planned facility of crushing and ore dressing plants is the electrical power distribution and control system. When management realizes that this system is fully as important as any other facility, then and only then can an adequate system be provided. It must be remembered that electric power is as much a component of the product as the raw material and labor. Those factors most involved in the production process have the greatest effect upon profit margins.

Since electric power is as much a component of the product as crushers and screens, it should be placed in the same category. However, the uses of the electric distribution system are broader than those of any machine in the plant. It is the driving force for each and every machine in the plant and is inherent in the process from start to finish. Production (and therefore profit) depends on electric power. A failure in the electric power stops production, turning profit into loss. The only insurance against power failure is an adequate electric power distribution system.

Because of the relatively small investment, it pays to install the best equipment to provide not only for immediate requirements but for possible future expansions. In this way maximum profits are assured from the overall plant investment.

To plan an electrical power system for a plant, it must be considered in its entirety. Made up of individual components, all must be integrated to form a whole co-ordinated system. Transformers must be matched with switchgear, as the size of the transformer determines the short circuit current the switchgear must be capable of interrupting.

Whether modernizing an existing system, preparing for automation, or planning the electrical distribution for a new plant, the starting point is to make a flow diagram of the plant based on the physical layout. This will indicate the components which are to be interlocked for automatic operation. From this, a one-line diagram of the complete system should be prepared, such as indicated in Figure 1. In determining the supply voltage, the public utility furnishing the power can be of material assistance. For instance, it may be advantageous to purchase power at the utility's transmission voltage.

This plan usually includes the purchase of the transformers to provide operating voltage for the plant distribution system. Most utilities provide a reduction in rates if the customer provides the transformers.

The main considerations in making the preliminary one-line diagram are as follows:

1. **Economics of the system.** Systems should be compared on the basis of costs and should include all parts, from the power source down to and including utilization equip-

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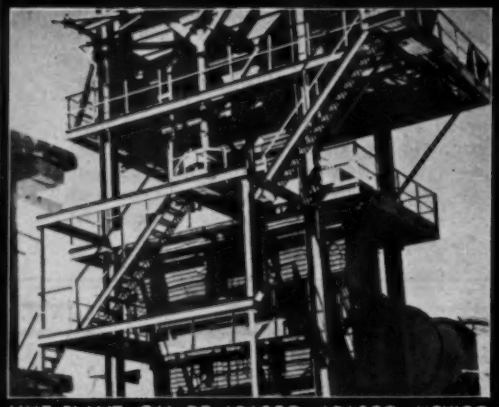
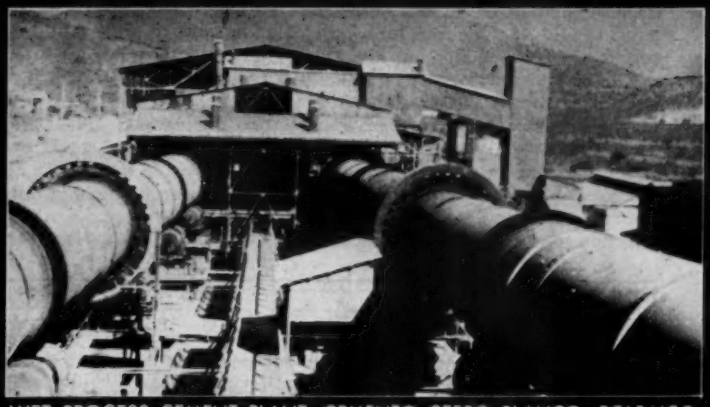


LIME PLANT: CAL DE APASCO: APASCO, MEXICO

CEMENT



WET PROCESS CEMENT PLANT: CEMENTO CERRO BLANCO: POLPAICO, CHILE

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DRY PROCESS CEMENT PLANT WITH WASTE HEAT POWER: ITALCEMENTI: TRIESTE

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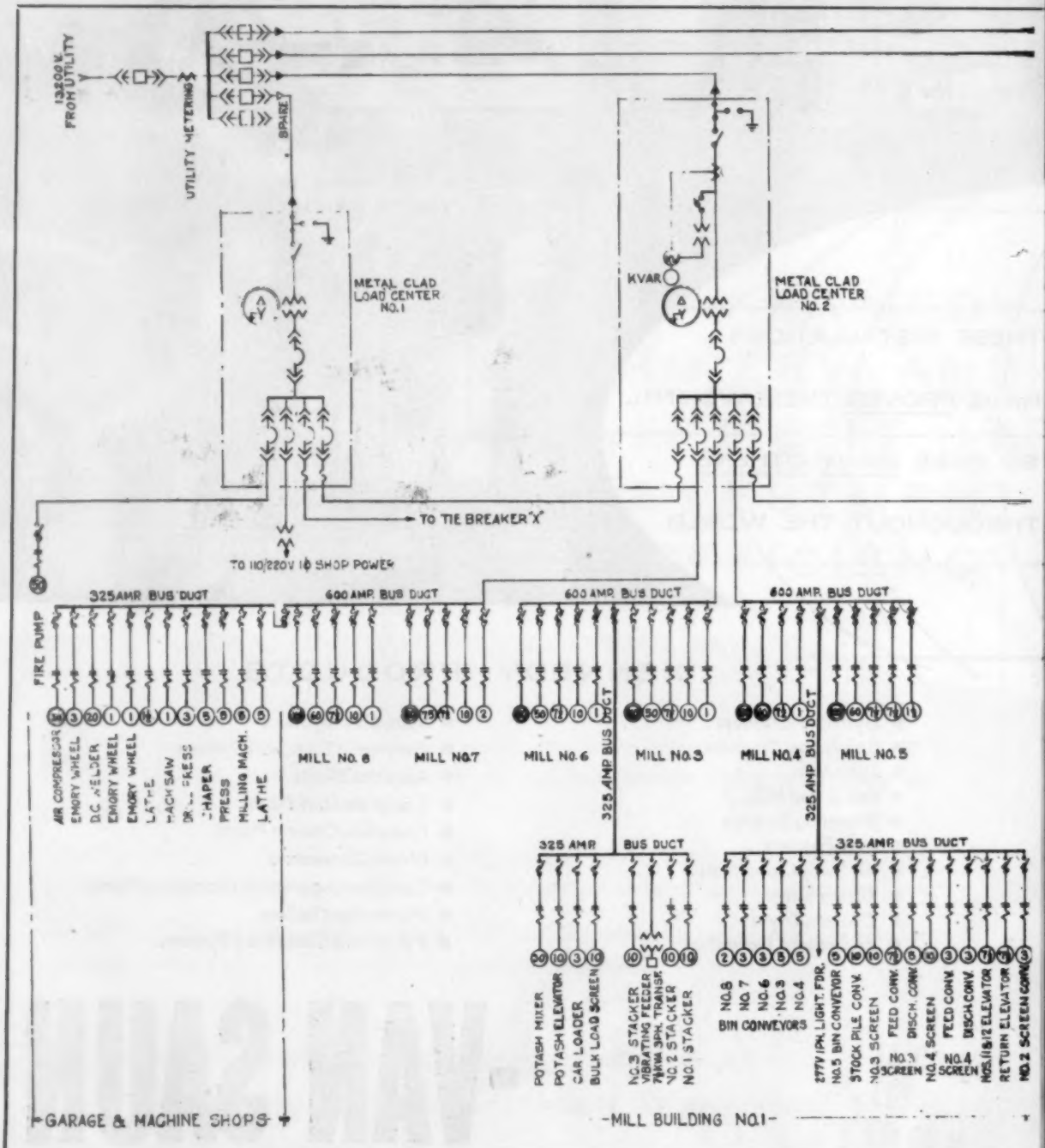
ment. Comparison of various systems should include not only the cost of the components, but also the cost of the complete system installed ready to operate. The components of one system may be cheaper than those of another, but the cost of installing the first system may bring the total expense much higher than the second system. Therefore, the selection of a system should be based on the *cost completely intsalled*, ready to operate, and not on the cost of the individual components.

2. **Service reliability.** Every quarry or ore dressing plant is a production line process. The failure of any component may cause a complete shut-down of the plant. Service reliability can be assured only by simplicity of system design and duplicate channels for routing the power to any load.

3. **Maintenance.** Since maintenance is usually in nontechnical hands, the system must be designed to provide for alternate power channels, so that one may be taken out of service for maintenance without interrupting service to an essential load.

Fig. 1. A typical one-line diagram of an electrical power system for a plant.

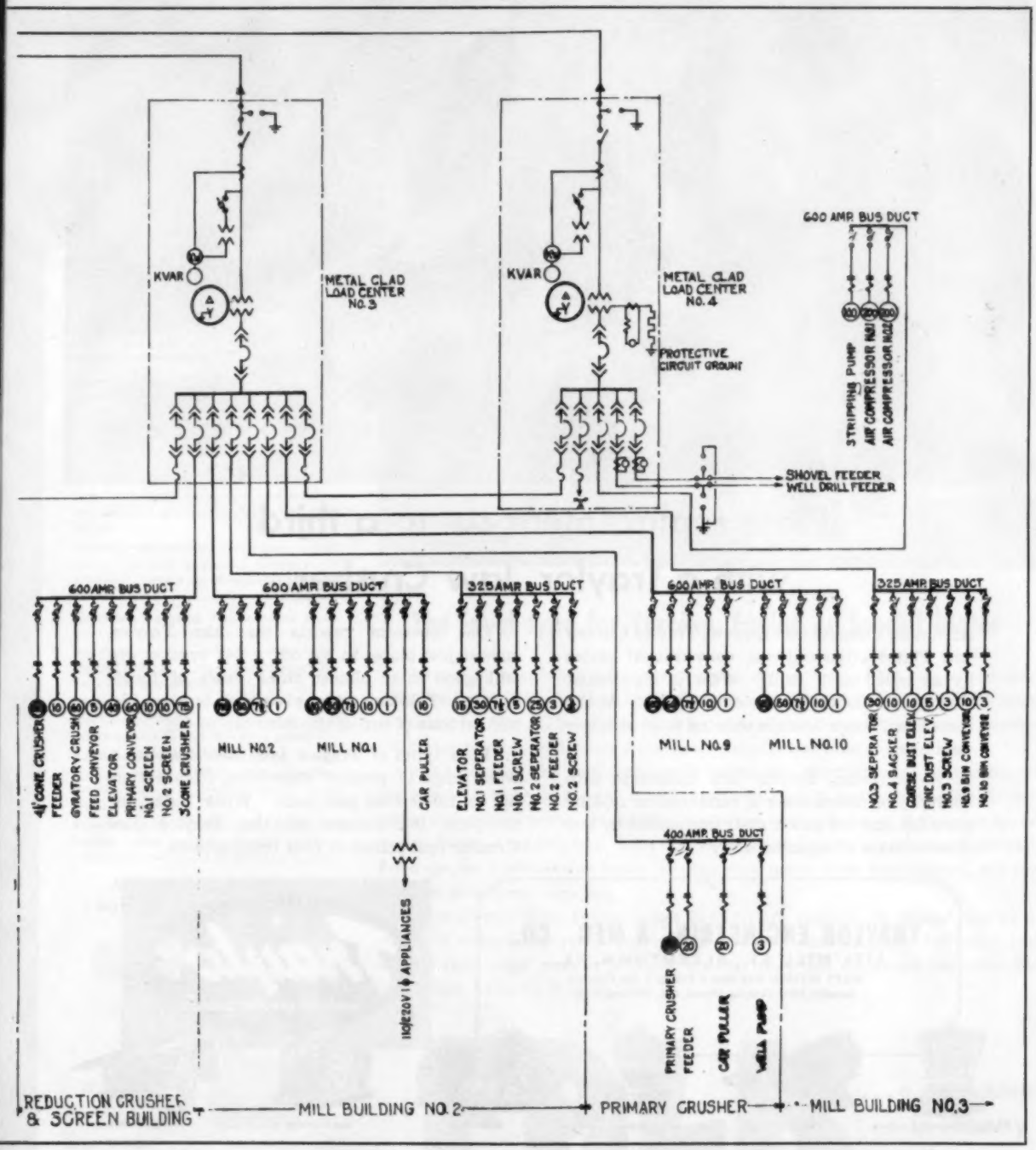


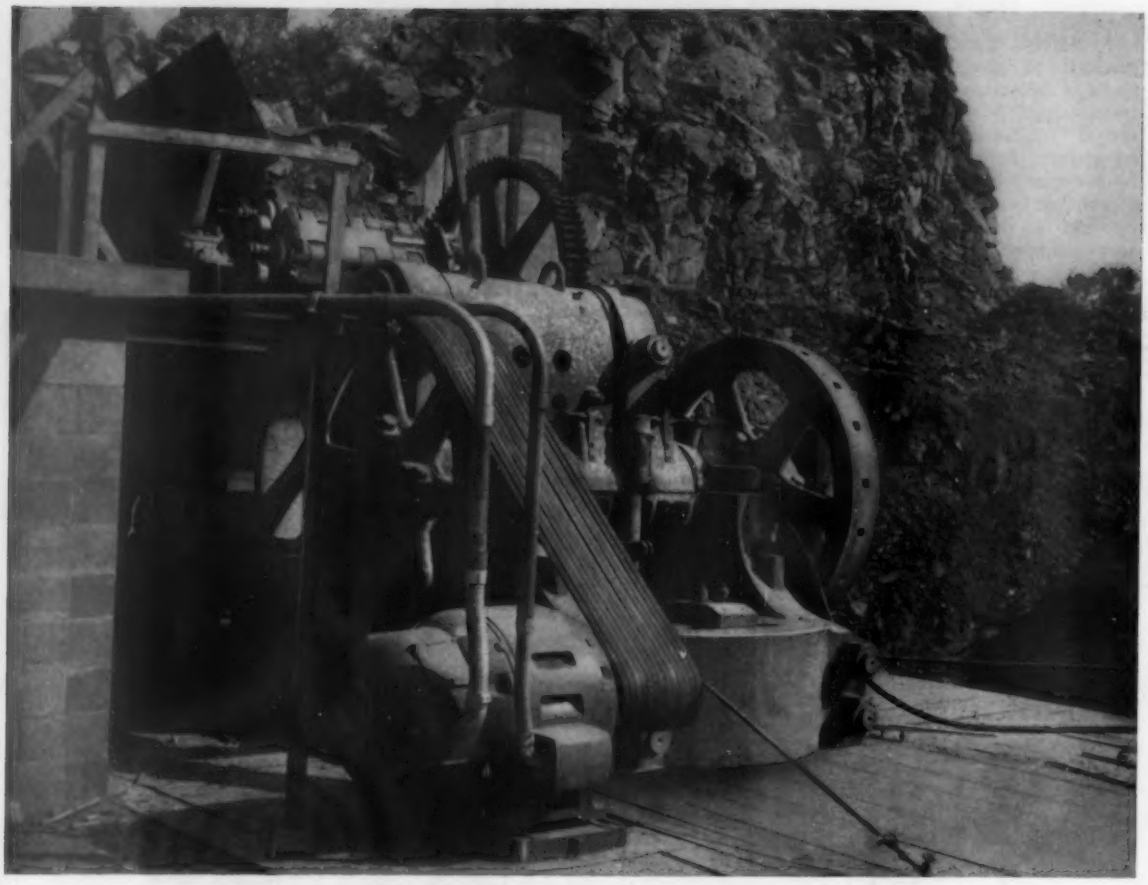
4. **Safety.** Since electric power is essential to production, where all types of labor may be found, three fundamental principles must be observed: (a) all live conductors must be enclosed in grounded metal; (b) no energized equipment or conductors should be accessible to be worked on; and (c) adequate circuit protection equipment must be provided.

5. **Flexibility.** Processes and products change as demands vary. A plant should be so designed that the end products can be changed with the minimum changes in the electrical distribution system. This can best be accomplished by installing a load center system consisting of small substations which can be added in small blocks or moved as may be required.

Due to the type of load found in crushing plants, the electrical distribution system requires more careful planning than in most other industries.

Take for example, the load characteristics of a jaw or gyratory crusher. Figure 2 is typical of the swing of current. With such wide variations in current, the voltage, unless the system is properly designed, will vary accordingly. Since the running torque of the motor varies as the





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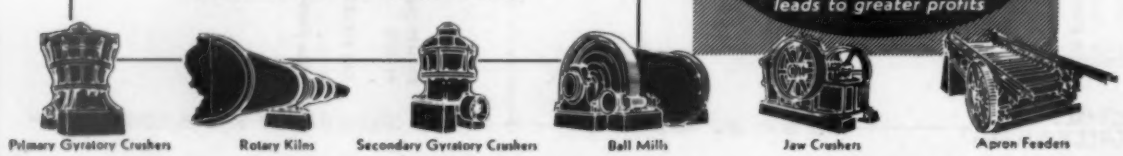

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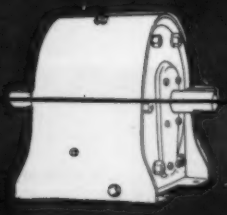
ALL-STEEL **FALK SPEED REDUCER**

(Concentric Type)



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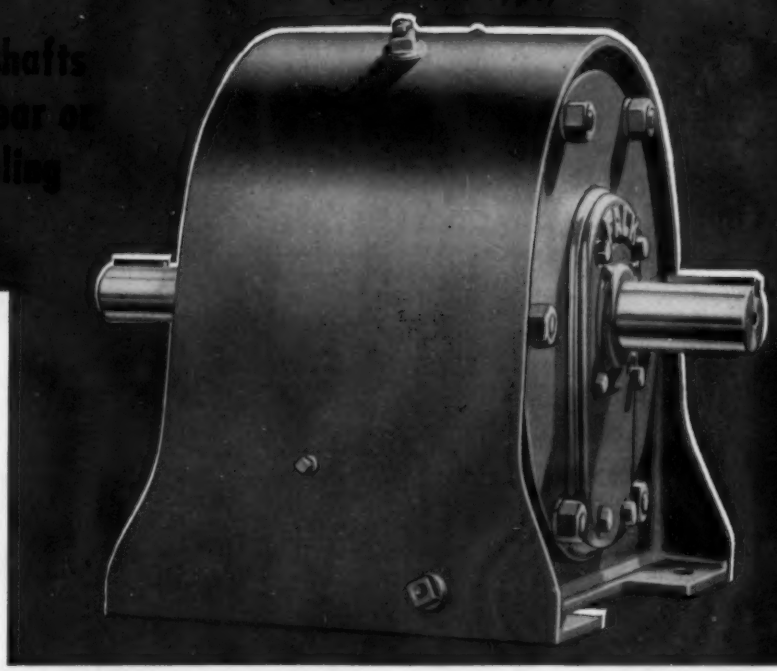

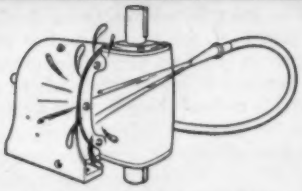

The Type "C" Speed Reducer has these "In-built" Factors:

Sealed Housings. Dual closures and one-way vents keep oil in, dust and moisture out. Units are splash-proof, leakproof, dust-proof.

Positive Lubrication. Large sump capacity . . . oil-tight construction assures clean lubricant . . . direct dip of revolving elements provides positive lubrication at all speeds.

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Wide Speed Range. Selective ratio combinations provide output speeds from 1.5 rpm to 1430 rpm with stock gears.

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Streamlined inside and outside. Smooth, clean surfaces; machine welded construction conforms to NEMA motor frames.

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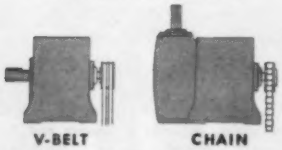

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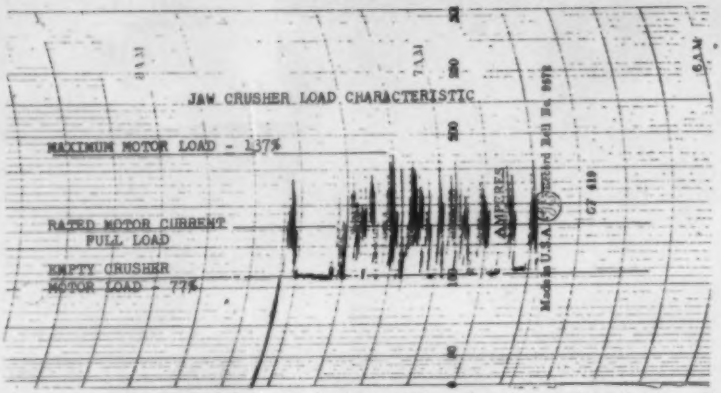


Fig. 2. A graphic record of the load characteristics of a jaw crusher, showing wide current variation.

square of the voltage, a 10 percent drop in voltage produces a 19 percent decrease in torque, as well as overload capacity of the motor. The full load current will also increase 11 percent, which will accentuate the voltage drop.

To maintain proper voltage and hold the current to the minimum, the proper transforming and control equipment must be installed, and particular attention must be paid to the size and type of conductors which transmit the power from the load distribution centers to the individual motors.

To accommodate increased motor and other load requirements, the total kv.-a. capacity of the power systems in most plants has increased to higher and higher values. This results in a system capable of delivering a fault or short circuit current many hundred times the normal full load current to any individual motor. The usual practice is to select a motor starter based on overload protection only. Evidently this does not provide the interrupting capacity for large fault currents. Since the hazards involved are not realized, no protection is provided for the starter itself, the motor, or the plant personnel. Since most industrial-type feeder circuit breakers require several cycles to trip, the individual motor starter should be provided with current-limiting protection against fault or short circuit currents.

Since practically all equipment in rock crushing and ore dressing plants is motor-driven, the selection of the proper motor and control to meet the conditions of operation must be carefully determined. If the equipment is to be opertaed at constant speed, the induction motor should receive first consideration.

The next consideration is to determine the starting requirements. When an induction motor is started on full line voltage, a sudden hammer-blow application of torque is applied to the machine which can result in damage. There are several means of providing smooth application of reduced starting torque to the driven shaft, *i.e.*, by (1) reduced voltage starting, (2) special torque motors, (3) clutching technique such as a centrifugal clutch between motor and driven machine, and (4) fluid drive.

After the proper motor and control has been selected, the utilization voltage must be determined. Motors rated at 250 hp. and over are usually operated on 2,300 or 4,160 volt systems and motors rated at 200 hp. and under on 440 volts. When the determination of the operating voltage has been made, motors in close proximity should be grouped to be supplied by feeders originating from load distribution centers. Figure 3 illustrates a load center consisting of high-voltage switching equipment, a unit substation transformer, and a bank of switchgear including feeder and transformer low-voltage protection.

To define automation more clearly as it applies to quarry or ore dressing plants, automation is not simply mechanization, such as adding a crusher. As soon as transfer devices are added, such as a feeder and a discharge conveyor, the combination of the three constitutes automation. The controls of the three pieces of equipment must be co-ordinated and interlocked so that the combination operates as a co-ordinated component of the plant. To expand this idea still further, components which are interrelated must likewise be integrated into the whole production line.

There are several factors which limit the possibilities of completely automated heavy materials-handling and processing installations.

The most important factor is the judgment of the operator. For example, it requires human judgment to determine when and where a shovel is to load the ore. The shovel, with all its automatic controls, cannot discriminate between overburden and rock or ore. It cannot determine where to unload the dug rocks or ore into hauling equipment. The answer is obvious—full automation does not apply. Human judgment is required!

On the other hand, automation can be used and is being used in portions of quarry and ore dressing plants, especially in the materials-handling cycles. The equipment now used provides one or both of the following features: (1) closed cycle

(*Continued on page* 144.)

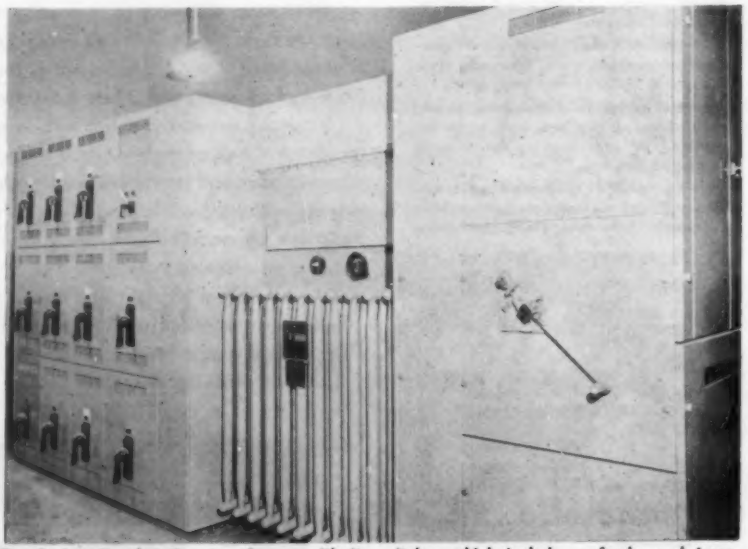
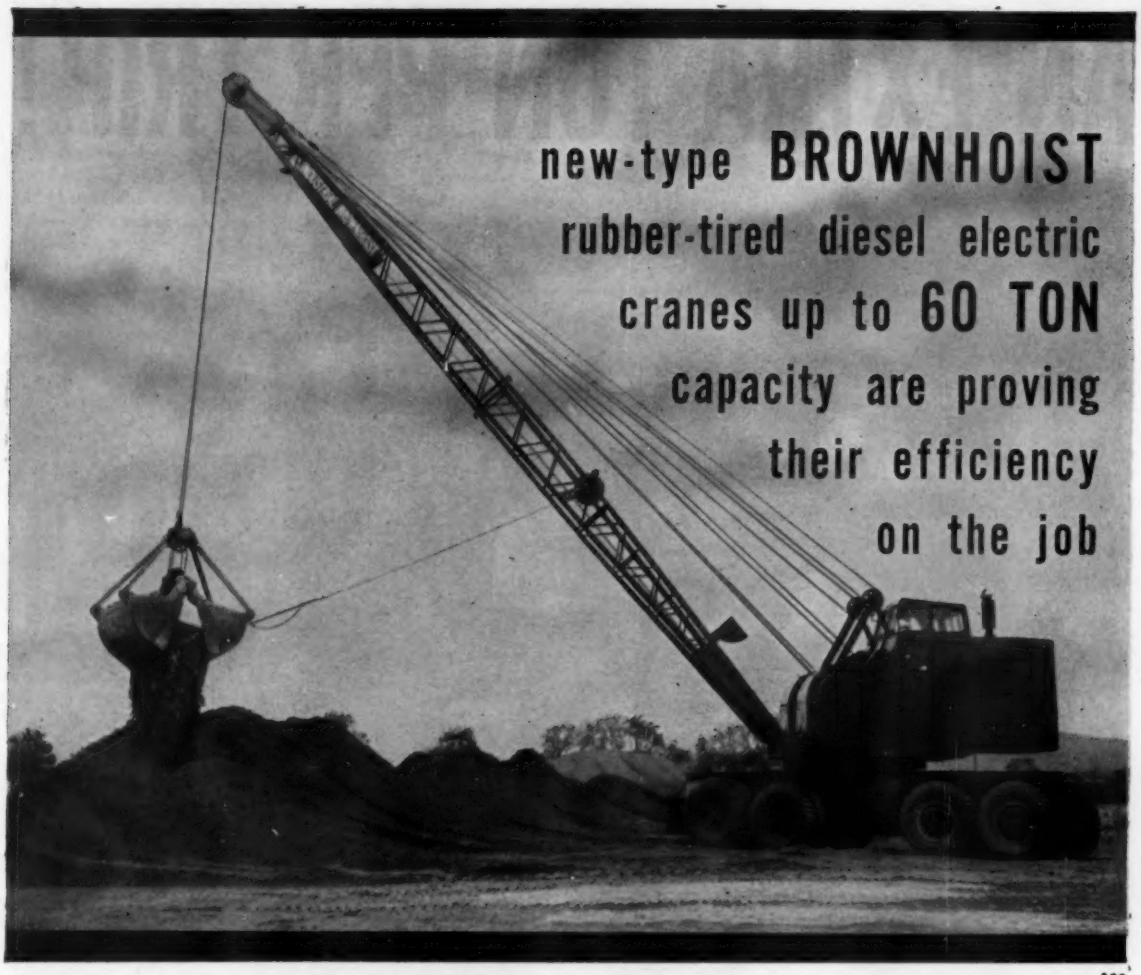


Fig. 3 A unit substation transformer with its switches, which includes a feeder and transformer low-voltage protection.



183

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Good working conditions, pay, and opportunity for advancement are recognized standards toward employee satisfaction. It is admitted by one and all that management can hardly expect the cooperation from its employees that it seeks without these three factors.

There is much more to insurance of job satisfaction on the part of any employee with the company. The three foregoing factors provide the foundation upon which the program can be built. To this must be added as many further steps as can be taken from time to time in a continuing program, which never approaches the point of pampering, however.

Much of our program is nothing more than educating employees to their position within the company, to the company's aims, to its place in the world in which we live and the society of which we are so proud, and insuring their satisfaction that they are working for the best possible firm regardless of what any troublemakers or agitators may tell them.

Employees well educated in the company and its policies, in their role with the company, their responsibilities to the company and its customers and the company's responsibilities to them, are always much more satisfied at their jobs than those where management works on a program embracing only the three main essentials mentioned in the foregoing.

Here are a number of such points which should be covered by the program to increase employee satisfaction with their jobs and thereby increase the value of every man and woman to the company organization.

Complete knowledge of company rules and regulations, and the why of each and every one of those rules. Often a rule stated in cold type leaves much to be understood by the employee. He or she will normally follow that rule but never with the enthusiasm present when he fully and completely understands the reasons why the rule has been set up.

No regulation of any kind, no matter how small, should ever be set down by the company management without some sort of an explanation of the need for that rule. We cannot take it for granted that every employee will understand without reason or that his or her reasoning will provide the proper interpretation. And the "obey or else" system has long vanished from the American scene.

Understanding of company importance not only in the business world but in the community life and social structure of our society is next. Our enthusiasm is always greatest on those projects which we feel are of most importance; this applies equally well insofar as the employee and his job are concerned.

The man with instinctive pride in the company for which he works is a good will ambassador we could not buy for thousands of dollars, the most effective weapon we have against general public misunderstanding. Satisfaction with one's job and pride in it go hand in hand.

Faith in his own importance to the company. The employee who feels that he or she is just another faceless cog in the company machine and can be replaced at the whim of some unknown higher executive anytime has little faith or confidence in his job or the company. Each employee must feel that he as an individual is important to the company management. He must feel that the company appreciates his good efforts and that he is a lot more than a social security number to the firm.

Any executive can fully appreciate the importance of this factor by considering his own position in the same light. He knows that he works harder at his job when executives higher up have made him feel important and given him evidence of his importance to the company. The men and women who work under him are no different; they have the same reactions.

Understanding of company problems should go far beyond the executive circle. In those organizations which make it a policy through meetings, company house organs and other methods to tell even the lowliest worker about the company problems there is always much more accomplished with less effort.

A full understanding of the company problems, big and small, by the average employee makes that employee a much more efficient worker and a much more satisfied individual. Men do their own jobs much better if they understand how what they do fits into the solution of the overall problems of the company.

These efforts should also go into the field of public relations with every employee working as an unrecognized assistant in that department. The employee who understands thoroughly the problems of his company can always answer questions directed at him by outsiders.

Confidence and pride in the company always means much more satisfied employees, less labor trouble and better output from each individual. Confidence and pride in the company inspire more creative work effort by each individual.

These attributes result from carefully planned company policy directed toward that end. They are attained by executive examination of each and every employee-management problem in the light of whether or not it will automatically build such confidence and pride or whether explanations are in order to make sure such a situation is attained.

It has also been noted in scores of surveys that those firms which work hard at maintaining confidence and pride in the employee ranks are those with the very lowest rate of employee turnover. This holds true even in some instances where many other factors are ignored.

Assurance of fair and impartial treatment is of great importance to employee satisfaction with his or her job. Any individual who must work under a constant cloud of uncertainty is an individual giving little more than he must to his job. His efficiency is always greatly reduced.

Such assurance comes from more than mere declaration of management policy toward attaining fair and impartial treatment; the convincer comes in actual demonstration of the policy at every opportunity. The employee will be sold on the existence of such a situation by which he sees done in handling the incidents that arise among his fellow workers, and by how he as an individual is handled in his first case of dispute.

This first case must be handled with utmost tact by supervisory personnel for the impression left remains long thereafter, and one mistake made in the first dispute will never be forgotten no matter how

much a supervisor may lean over backward in the future.

Freedom to offer suggestions and criticism is of the utmost importance in employee relations toward building greater job satisfaction. The individual who feels that management will never be really interested in his ideas soon loses enthusiasm for his job. A worker who knows he can always ask questions or even criticize has much more faith and confidence in the company and his job.

There are, of course, many additional factors which contribute to greater employee satisfaction with his or her job. These ideas offer a start toward a program which will result in maximum efficiency at every post, more extra enthusiasm for the job, fewer labor troubles and greatly reduced job turnover.

Automation

(*From page* 140.)

control or (2) accurate sequencing.

For better understanding of closed cycle control consider again the power shovel. Assuming that it is an electric shovel and that the operator has placed the dipper in the proper place, the dipper is raised in the shortest permissible time through the use of a closed-cycle circuit with automatic current limit control. The torque applied to the dipper is limited to a value just short of the capacity of the motor. The speed is automatically regulated so that the dipper motor is loaded as heavily as possible during the digging cycle. Closed-circuit control prevents equipment damage because excessive torque is prevented from being applied up to the point of stalling.

In the case of accurate sequencing, through the proper sequence interlocking, the starting and stopping of the various conveyors, screens, and crushers are controlled so that the material flow is automatic.

A word of caution for those considering automation. Probably of most importance is the safety of both operator and machine. Adequate means must always be provided for bringing the machine to a quick stop. The stopping cycle must be initiated by proper devices for locating and signaling troubles such as faulty equipment, improper operation, and overloads. Proper personnel protection must also be provided for fast-moving machinery.

Automation reduces wear and tear on machines by eliminating jogging because accurate positioning is accomplished. Undue stress and strain are eliminated because of accurate regulation of speed and torque. Correct sequencing prevents mistakes.

Through the use of automation the operator is relieved, accidents are reduced, and the operator has more time to manage the equipment properly to select the correct flow patterns, and to obtain a faster operation cycle.

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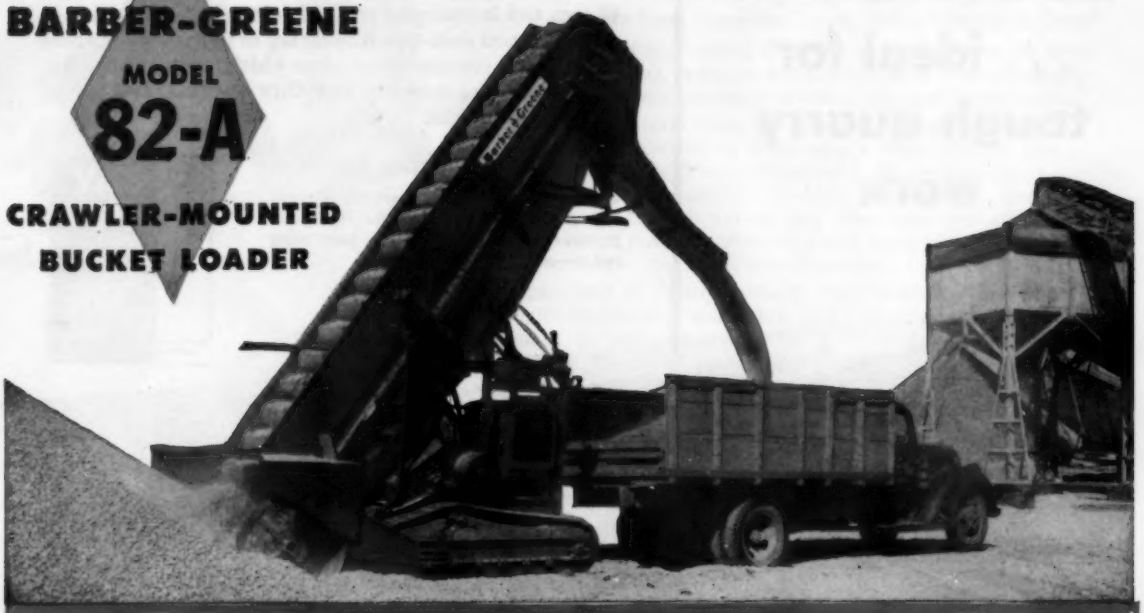

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Simple controls mean that each driver can load his own truck . . . no need for an expensive operator. Each truck can be loaded to full capacity without spillage . . . without truck damage or undue truck wear.

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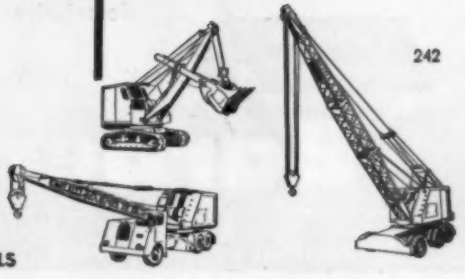

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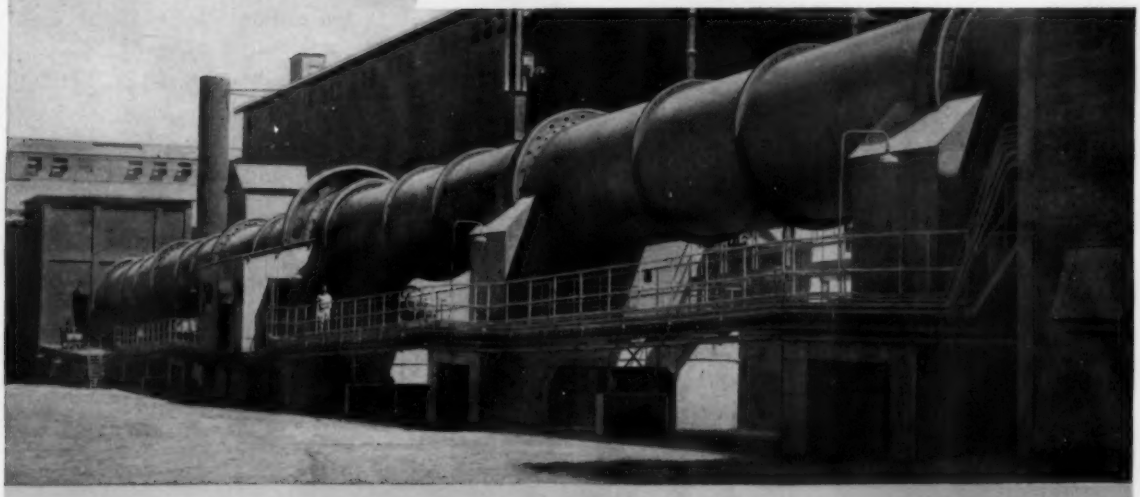

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Labor Developments

Moving to the $1 per Hour Minimum

MORE and more employers are beginning now to plan how to make an orderly and economical transition to the new $1 per hour minimum wage to become effective March 1.

While some employers need not be concerned immediately because they already pay their employees more than the new statutory minimum, many (if not most) operators of small and medium-sized businesses in the United States have some job classifications rated at less than $1 an hour. A trend seems to be developing to work out some kind of orderly transition.

The available alternatives to this course are the following:

1. To raise job classification rates and employee earnings which are still below $1 an hour to that level.
2. To raise job classification rates and employee earnings which are below $1 an hour to that level and to raise all other rates and earnings in the establishment by the same number of cents per hour or the same percentage.
3. To adopt some intermediate position, such as raising job classification rates and employee earnings which are below $1 an hour to that level and to raise higher rates and earnings by somewhat lesser amounts —perhaps, tapering off the increases as the rates and earnings rise.

The first possibility has the advantage of being least expensive immediately, but it has the undesirable result of narrowing the differential between the lowest rated (and presumably least important) jobs in the plant and the more highly rated more important jobs. This may reduce the desirability of the latter jobs and the productivity of the employees who occupy them.

The second possibility avoids much or all of the difficulty of narrowing differentials but it is the most expensive adjustment to the new minimum wage.

The third possibility is an "in-between" and a more flexible position. Many employers are giving it serious consideration. Its principal difficulty

By S. HERBERT UNTERBERGER

S. Herbert Unterberger and Company
Industrial and Labor Economist
Washington, D.C. - Philadelphia, Pa.

is that since it is so flexible, a high degree of adroitness is required in adjusting it most advantageously.

Actually, none of these methods meets the fundamental problem, which is *how to meet the higher wage requirement without raising unit costs.* Many employers are using the available time before the new wage becomes effective to review their operations for ways and means to eliminate every possible source of waste. Not a few are discovering that under pressure of these potentially higher labor costs they can find many cost-saving methods.

Finally, the imminence of higher labor costs has encouraged many employers to reconsider wage incentives as a method for increasing output per employee. They hope, thereby, to recover much of the increased direct cost from reduced overhead per unit of output.

This much is clear. Many employers recognize that they are facing a problem. They are beginning to take steps to measure it and cut it down to size.

Trend Toward Vested Pensions

A recent survey showed that pension plans contribute very little to solving the problem of recruiting desirable employees, but they exercise a powerful force in keeping employees attached to a particular employer. In some cases this force is too powerful, making it very difficult and occasionally impossible to dispose of unnecessary employees. This influence toward the reduced mobility of labor has been regarded with mixed feelings by employers, employees, and labor unions.

There are two reasons that pensions have such an adhesive effect, for in most pension plans (1) employees forfeit very valuable pension rights when they leave their jobs, and (2) employers are reluctant to hire older workers because of the high cost of building up a pension fund for them in the few remaining years.

The alternative, of course, is to permit employees to take their pension rights with them when they leave. The difficulty with this arrangement is that it raises the cost of the pension program considerably.

In calculating the cost of practically all the pension plans now in operation, account was taken of the fact that some employees would leave and the funds contributed on their behalf would go to defray the pension cost for those remaining.

Nevertheless, the trend in the other direction has begun. In the recent negotiations in the automobile industry, the parties agreed that employees who are 40 years old or more and who have had 10 years of service will get pensions at age 65 based on their years of service, whether or not they stay with the company. Younger employees with 10 years of service who quit or are fired also receive certain vested rights for pensions at age 65.

A compromise solution was negotiated by the CIO Newspaper Guild, which agreed that an employee who terminates his employment does not get any vested pension rights, but he may collect up to 45 percent of the money paid into the pension fund on his behalf.

If this trend develops, the employer who was sold a pension plan on the ground that it would pay for itself by reducing labor turnover is doomed to suffer a double disappointment: (1) if the employee will be able to keep his pension even though he quits his job, there is nothing to prevent labor turnover from rising to its old level and, perhaps, even increasing; (2) although this advantage is lost, his costs may be expected to rise.

Finally, the administrative problem of keeping track of employees who change employers frequently looks formidable. Even the Social Security Board has trouble keeping track of roaming employees.

Perhaps the voices which cried out against the trend toward private pension plans as a bad alternative for improved Social Security benefits will prove to be prophetic after all.

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14 Operations Win Honors In '54 N.L.A. Safety Contest

Certificates of Honor have been awarded to 14 operations of the National Lime Association for injury-free records during its 1954 Safety Competition, conducted by the U. S. Bureau of Mines.

Prize-winning quarries with calcining plants working 100,000 or more man-hours are the following:

Cedar Hollow plant, Devault, Pa., operated by Warner Company 272,599 man-hours.

New Braunfels plant, New Braunfels, Tex., operated by United States Gypsum Company 236,504 man-hours.

Natividad plant, Natividad, Calif., operated by Kaiser Aluminum and Chemical Corporation 232,032 man-hours.

York plant, York, Pa., operated by National Gypsum Company 230,843 man-hours.

Gibsonburg plant, Gibsonburg, Ohio, operated by The Kelley Island Company 204,402 man-hours.

Martinsburg plant, Martinsburg, W. Va., operated by Jones and Laughlin Steel Corporation, Blair Limestone Division, 166,476 man-hours.

Knoxville plant, Knoxville, Tenn., operated by The Standard Lime and Stone Company 111,200 man-hours.

Prize-winning quarries with calcining plants working less than 100,000 man-hours are:

Cleburne plant, Cleburne, Tex., operated by Texas Lime Company 82,536 man-hours; and

Ripplemead plant, Ripplemead, Va., operated by Ripplemead Lime Company, Incorporated, 43,200 man-hours.

Under the classification of underground mines with calcining plants, the following operations were cited:

Bell plant, Bellefonte, Pa., operated by Warner Company, Bellefonte Division, 539,241 man-hours.

Kimballton plant, Kimballton, Va., operated by The Standard Lime and Stone Company 222,667 man-hours.

Award winners operating calcining plants only were the following:

Peerless plant, Ste. Genevieve, Mo., operated by Mississippi Lime Company of Ludington Division, 69,891 man-hours.

Springfield Lime plant, Springfield, Mo., operated by Ash Grove Lime and Portland Company 81,518 man-hours.

Ludington plant, Ludington, Mich., operated by The Dow Chemical Company, Ludington Division, 69,891 man-hours.

The total injury-free man-hours of worktime at the 14 winning plants was 2,666,548, or 28 percent of the total man-hours worked at the 51 plants entered in the competition.

A record low frequency rate was established in the 1954 competition —14.279 injuries per 1,000,000 man-hours—and the injury-severity rate —1.748—was the third-lowest in the history of the contest. Of the total enrollment, 27 (53 percent) had injury-frequency rates lower than the average rate for all plants; and the severity rates at all but 7 (86 percent) of the number of plants participating was lower than the 1954 average.

During a total worktime of 9,594,398 man-hours, which was 12 percent below the aggregate of the previous year, there were 137 injuries, a decrease of 28 percent compared with the total number reported in the 1953 contest. Of the 137 injuries, 2 were fatal, 3 permanent-partial, and 132 temporary-total disabilities. The total loss in time resulting from these injuries was 16,769 days, almost one-half the amount of loss reported in 1953.

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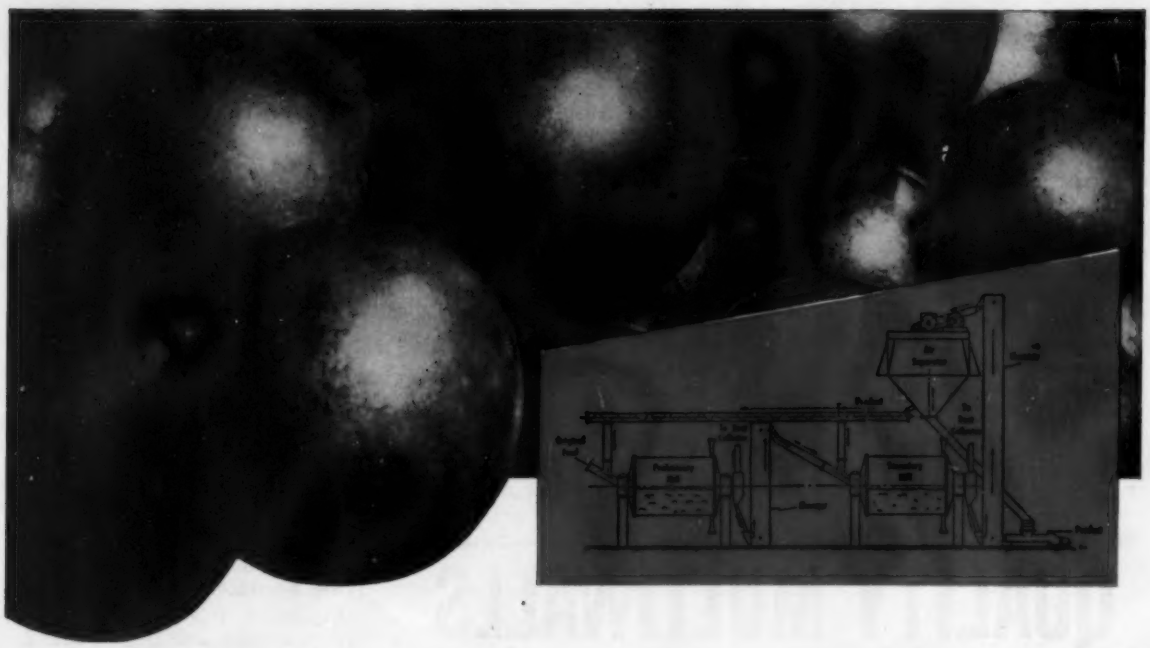

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the contest is divided, the frequency rate of injuries was lowest at the 21 quarries having calcining plants working 100,000 or more man-hours (Group A-1). The severity rate was lowest at the 12 plants with calcining plants only (Group C). The frequency rate was highest at the 9 plants that comprised Group A-2; and the highest severity rate was recorded in Group B, or underground mines with calcining plants.

In the 1954 competition, 39 of the 51 plants had participated in the 1953 competition. Comparison of the injury experience at the plants in both years shows that the rates of occurrence and severity of injuries were lower in the recent contest than in 1953. The injury experience at 7 identical plants enrolled in the competition since 1935 shows notable improvement in the injury-frequency and severity rates over the 7-plant record of 1953.

Types of injuries in the 1954 competition followed a pattern established for several years with some deviations. Injuries from handling material accounted for the greatest number; falls of persons and machinery accidents, equally divided, followed; and falling objects and haulage accidents were the other principal causes of injuries. The most severe injuries resulted from falls and slides of rock, and from accidents involving machinery. Of the temporary-total disabilities the most severe were caused by falls and slides of rock.

The 51 plants entered in the 1954 competition were located in 20 states, Missouri leading with 7 plants enrolled.

Sponsored by the National Lime Association, this safety competition is conducted annually by the Bureau of Mines. Any plant producing quick or hydrated lime or dead-burned dolomite sold commercially is eligible. Applications for enrollment may be obtained from the Branch of Accident Analyses, Division of Health and Safety, Washington 25, D. C.

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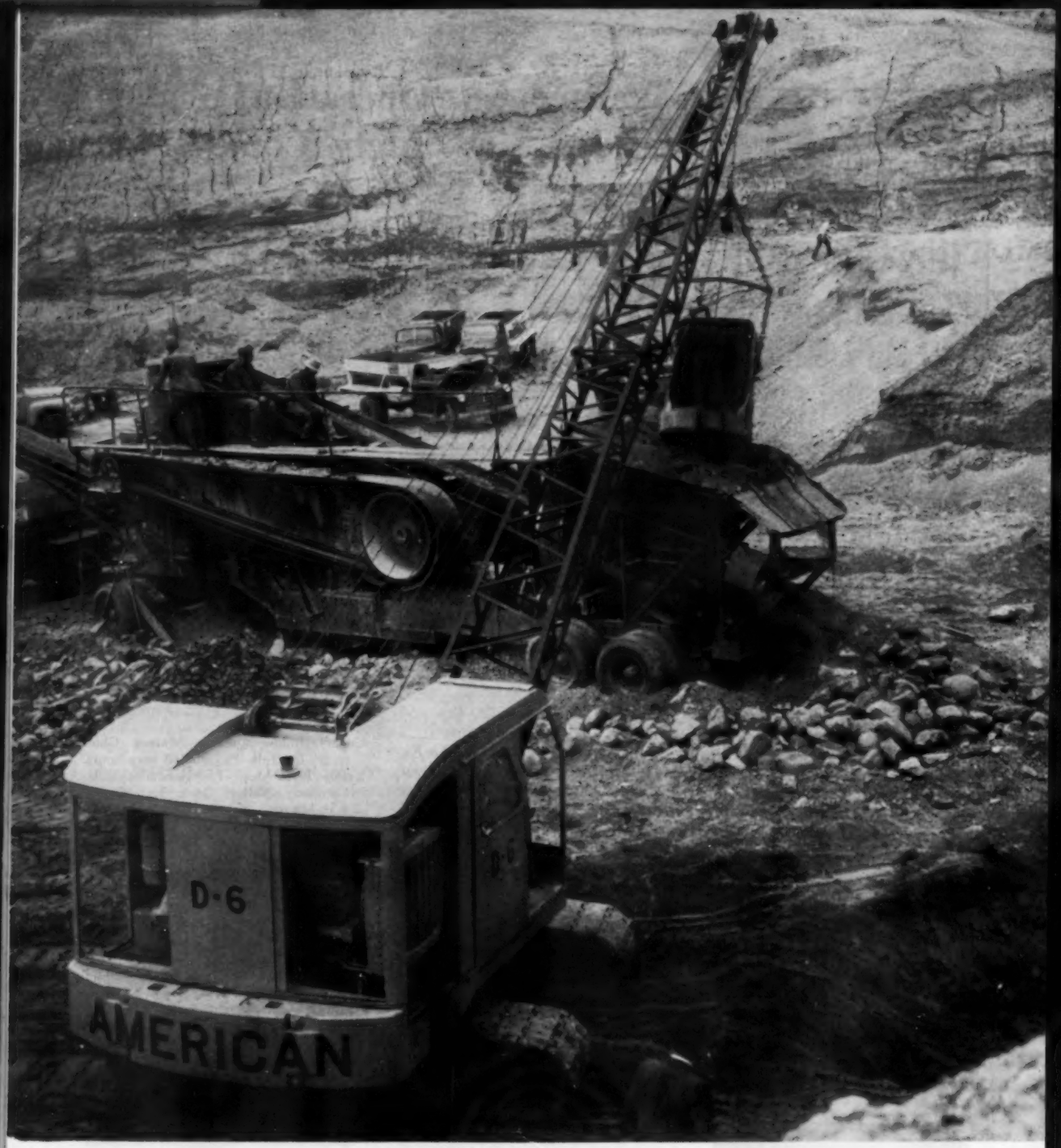
Talc, Allied Products Drop From Production Totals of 1953

Combined mine production of talc, soapstone, and pyrophyllite in the United States decreased 6 percent in quantity and 8 percent in value in 1954, compared with 1953, according to reports released by producers to the U. S. Bureau of Mines. Total production was given as 592,086 short tons, valued at $3,231,036. Pyrophyllite production increased 3 percent in 1954, compared with 1953, and exceeded the previous high recorded in 1952 by 1 percent. (Reports exclude soapstone sold in slabs.) Sales rose from $11,380,314 in 1953 to $11,557,498.

Most of the talc, soapstone, and pyrophyllite is ground by the producers before it enters trade, although some consumers buy crude material and grind it to the desired specifications in their own mills. Some producers sell crude material to grinders. The figures reported sold by producers show the proportion of material that enters trade in crude, sawed and manufactured, and ground form rather than the proportion of each grade sold by the primary producers.

In 1954, New York, California, and North Carolina continued to rank first, second, and third, respectively, in the quantity of talc, soapstone, and pyrophyllite produced. California continued to rank first in value of products. Production data for New York had to be concealed to prevent disclosure of individual company operations because of the reduction of the number of reporting companies from 3 to 2, as a result of the purchase of W. H. Loomis Talc Corporation by International Talc Company, Incorporated.



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Warner Co. Operation Winner Of N.C.S.A. Safety Competition

The injury experience at operations enrolled in the National Crushed Stone Safety Competition of 1954 was, by far, one of the best since the contest was inaugurated 29 years ago, according to the U. S. Bureau of Mines.

The frequency rate, 16.923 injuries per 1,000,000 man-hours of worktime in the 1954 competition, was the next-to-the-lowest rate ever made in the history of the contest—in 1939 the rate was 13.600—and the severity rate of 3.227, although not so good as in the previous year, has been better in only 5 other previous years. Although the injury record of the competing operations has not been improved from year to year, a definite progressive improvement has been attained over the 29-year span of the contest.

Top safety honors were won by the Bell underground limestone mine, Bellefonte Division, of the Warner Company at Bellefonte, Pa., for having operated a total of 246,689 man-hours during the year without a lost-time injury. For this outstanding safety accomplishment, a bronze plaque provided by *The Explosive Engineer Magazine* was won by this plant, and in recognition of the part each employee and official played in making this safety record possible, each was awarded a certificate by the National Crushed Stone Association.

The Greystone quarry of the Greystone Granite Quarries, Incorporated, at Henderson, N. C., the winner of top honors in 1953, ranked second in the 1954 contest for having an injury-free year during an aggregate of 223,902 man-hours. Third place was accorded the North Branford No. 7 quarry of The New Haven Trap Rock Company, at North Bradford, Conn., for operating 119,379 injury-free man-hours. The fourth-ranking plant was the Kimballton underground limestone mine of The Standard Lime and Stone Company at Kimballton, Va. This operation had no lost-time injuries during 104,065 man-hours of worktime.

Including the trophy winner, 6 underground mines and 15 quarries had no disabling injuries during the contest year. These 21 mines and quarries were worked a total of 1,540,303 man-hours or 23 percent of the total time worked by all 67 operations participating in the 1954 contest. These injury-free plants, including the trophy winner, were as follows:

Bell Mine, Warner Company, Bellefonte Div., Bellefonte, Pa., 246,689 man-hours.

Greystone Quarry, Greystone Granite Quarries, Inc., Henderson, N. C., 223,902 man-hours.

North Branford No. 7 Quarry, New Haven Trap Rock Company, North Branford, Conn., 119,379 man-hours.

Kimballton Mine, The Standard Lime and Stone Company, Kimballton, Va., 104,065 man-hours.

Red Hill Quarry, Superior Stone Company, Charlottesville, Va., 101,135 man-hours.

Rock Hill Quarry, The General Crushed Stone Company, Quakertown, Pa., 95,538 man-hours.

Woodleaf Quarry, Superior Stone Company, Woodleaf, N. C., 91,161 man-hours.

Jordanville Quarry, The General Crushed Stone Company, Jordanville, N. Y., 84,730 man-hours.

Watertown Quarry, The General Crushed Stone Company, Watertown, N. Y., 69,750 man-hours.

Union Furnace Quarry, Warner Company, Bellefonte Div., Tyrone, Pa., 58,707 man-hours.

Cedar Hollow Quarry, Warner Company, Devault, Pa., 56,848 man-hours.

Yellow Rock Mine, The Kentucky Stone Company, Yellow Rock, Ky., 54,476 man-hours.

Cape Girardeau Quarry, The Federal Materials Company, Cape Girardeau, Mo., 46,784 man-hours.

Prospect Stone Plant No. 6, Eastern Rock Products Inc., Prospect, N. Y., 46,213 man-hours.

Tyrone Mine, The Kentucky Stone Company, Lawrenceburg, Ky., 30,382 man-hours.

Avoca Quarry, Jefferson County Stone Company, Avoca, Ky., 27,104 man-hours.

Plant No. 4 Quarry, Southwest Stone Company, Knippa, Tex., 20,134 man-hours.

Randville Quarry, Superior Rock Products Company, Sagola, Mich., 19,395 man-hours.

No. 7 Quarry, Columbia Quarry Company, Elsberry, Mo., 18,336 man-hours.

High Bridge Mine, The Kentucky Stone Company, High Bridge, Ky., 14,902 man-hours.

Elkton Quarry, The Kentucky Stone Company, Elkton, Ky., 10,673 man-hours.

Over-all injury experience at the 67 operations enrolled in the 1954 competition was better than the average for the 29 years of the contest. The injury-frequency rate of 16.923 injuries per 1,000,000 man-hours was the second-lowest annual rate, 41 percent lower than the 29-year

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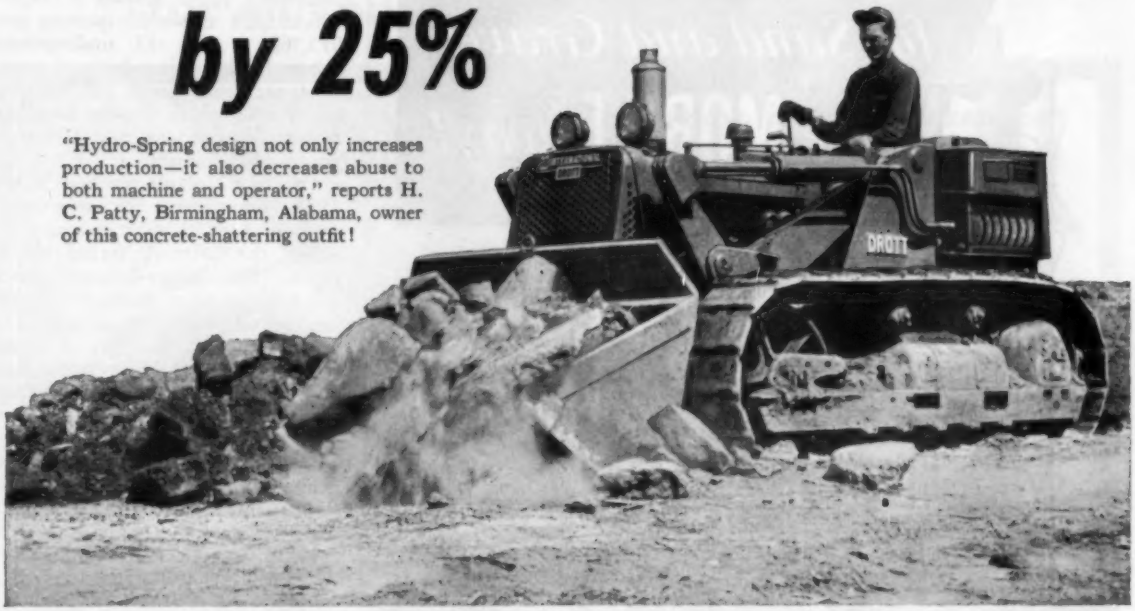

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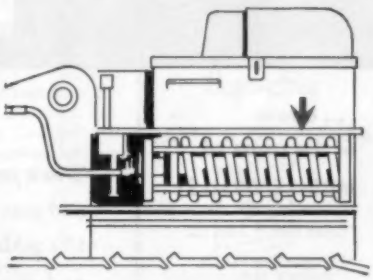

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average, and slightly better than the 1953 rate. The severity rate of 3.227 days per 1,000 man-hours was the sixth-lowest annual rate, 38 percent lower than the 29-year average; but it was 38 percent higher than the previous year's rate.

Man-hours of worktime at the competing plants totaled 6,795,590—5,880,228 at the 55 quarries and 915,362 at the 12 underground mines. During this volume of worktime, accidents caused 115 lost-time injuries, of which 2 were fatalities, 9 partial-permanent, and 104 temporary-total injuries.

Of the 67 plants enrolled in the 1954 competition, 55 were open quarries and 12 were underground mines, the latter, a record enrollment. The injury-frequency rate (17.856) at open quarries was the next-lowest rate on record. The severity rate (2.581), while almost double that of the 29-year average, continued an improved trend from 1948, when this rate was 5.272.

At the 12 underground mines enrolled in the 1954 competition, the injury frequency of 10.925 was slightly higher than the corresponding 1953 rate; however, it was the fourth-best rate on record, better only in 1937, 1938, and 1953. The high severity rate of 7.379 per 1,000 man-hours was the result of a fatality, the first recorded for underground mines since 1950.

Accidents involving handling materials or objects were responsible for 21, or 20 percent, of all injuries for which causes were specifically reported. Falling objects resulted in 13 nonfatal injuries and 1 death, or 14 percent; falls of persons injured 12, or 12 percent; bumping against objects and machinery accidents, 10 each; haulage accidents, 8; and struck by flying object or objects, 6. The most severe injuries were those involving machinery, falling objects, and flying objects. The total number of disability days under those three types of injuries amounted to 19,439 or over 89 percent of the time lost because of all injuries.

This safety competition among operations in the crushed stone industry is conducted by the Bureau of Mines under the same rules as the National Safety Competition. The same records are used in both contests. However, there are two additional requirements that must be established before a crushed stone operation may participate in this competition: (1) It must have commercial production of crushed stone, and (2) it must be a member of the National Crushed Stone Association.

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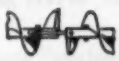

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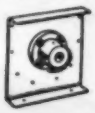

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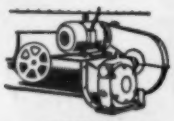

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Here's a four-point program that provides quick and easy answers to your screw conveyor problems whether minor or complex. Whatever you need in components . . . and to whatever extent you require engineering supervision—Link-Belt will devise a system "tailored" to your requirements, correlating all factors to assure you of finest performance. For more facts, call your nearby Link-Belt office.

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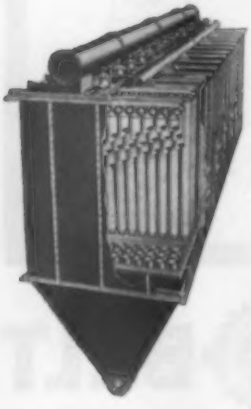
THE SYMBOL OF QUALITY — LINK-BELT

SCREW CONVEYOR EQUIPMENT

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 13,013

That's the guarantee you get with **Norblo** Automatic Bag Type Arresters

By "constant" we mean what operating men *expect* it to mean when applied to dust collection — *no* loss of suction drop, *no* down time, *no* variation in capacity.



Norblo's unit compartment system, with automatically controlled progressive and cyclic bag cleaning maintains the full capacity for which the particular installation is engineered. Bag cleaning is easily regulated if dust loading rate should change. Only one compartment is cut out at a time for cleaning (and that for only a few seconds) by means of moderate shaking which insures long bag life. A small quantity of reverse air is used to prevent unwanted dust flow during shaking operation. Excess dust is dropped without destroying the desirable basic filter cake.

Profitable, consistent performance of Norblo automatic dust and fume collection equipment is demonstrated in hundreds of important installations. If you need this facility for production, for salvage, or for good housekeeping, ask Norblo engineers what they can do for you. Write for Bulletin 164-4.

The Northern Blower Company
Engineered Dust Collection Systems for All Industries
6407 Barberton Ave. OLympic 1-1300 Cleveland 2, Ohio

Nonmetallic Minerals Share In $5,989,130 Research Plan

Funds totaling $18,863,000, just made available to the U. S. Bureau of Mines for the fiscal year 1956, will enable that agency to embark on new research programs and to continue its long-range tasks of promoting efficiency, economy, and safety in the mineral and allied industries, Acting Secretary of the Interior Clarence A. Davis has disclosed.

The appropriation approved by the Congress and signed into law by President Eisenhower is exactly that requested by the Department of the Interior. It represents a $6,637,000 reduction from the 1955 appropriations, which included $6,000,000 in construction funds for new helium plants.

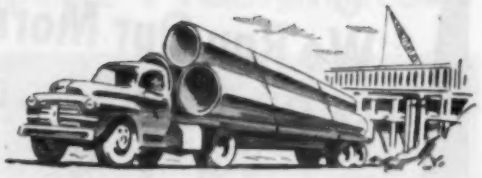
Of the total appropriation, the Bureau will use $6,603,870 for its programs on solid, liquid, and gaseous fuels, $300,000 for controlling fires in inactive coal deposits, $5,989,130 for studies on metallic and nonmetallic minerals, $5,000,000 for its health, safety, and coal-mine inspection programs, and $970,000 for general administrative expenses. These activities will be directed from the Washington headquarters and carried on in experiment stations, laboratories, pilot plants, offices, and operating mines throughout the continental United States and Alaska.

The Bureau will continue its long-range program of mining and metallurgical research, and investigations directed toward more effective exploitation of mineral resources and the eventual commercial development of domestic mineral deposits now marginal or submarginal. Studies of the basic mechanics of block caving will be stepped up.

Among problems in the field of nonmetallic minerals, the Bureau of Mines will seek ways for reducing the nation's dependence upon imports of such materials as asbestos, mica, and industrial diamonds. This will involve search for methods of utilizing low-grade domestic deposits and efforts to develop or synthesize acceptable replacements. Other activities to be carried on during the year include investigating new sources of refractory materials in areas threatened with shortages and continued development of a mining machine called a "planer" to reduce the cost and increase the safety of mining western phosphate rock.

Production of lightweight expanded shale at the Shepherdsville, Ky., plant of Kentucky Light Aggregates, Inc., has been doubled with the erection of a $200,000 kiln.

EATON 2-SPEED AXLES keep Trucks on the Job- Reduce Maintenance Costs



By providing a gear ratio best suited for each road and load condition, Eaton 2-Speed Axles permit engines to work in their most efficient and economical speed range, reducing stress and wear on operating truck parts. Truck maintenance is reduced, trucks deliver more on-the-job hours. In addition, because of Eaton's exclusive planetary design, forced feed lubrication, and extra rugged construction, there's less maintenance on the axle itself. When axle repair *is* required, Eaton's down-to-earth design makes the work quick, easy, and economical. Trucks with Eaton 2-Speed Axles last longer, earn more at lower cost, are worth more on the trade-in.

Ask your Truck Dealer for Complete Information.

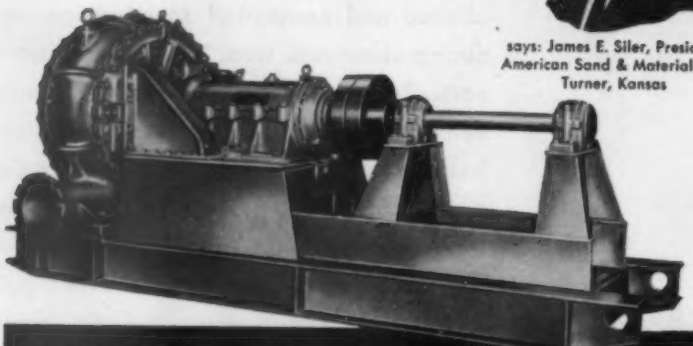
More than Two Million Eaton Axles in Trucks Today!

EATON AXLE DIVISION
MANUFACTURING COMPANY
CLEVELAND, OHIO

PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater-Defroster Units • Snap Rings Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

"We Ran Our Morris Pump for 25 YEARS... and then Doubled its Load!"

says: James E. Siler, President
American Sand & Material Co.,
Turner, Kansas



NOW... combining the lower speeds and outstanding reliability of the Morris Type "F"

AND the modern hydraulic design, high heads and efficiency of the Morris Type "G"...

THE NEW MORRIS

DREDGE PUMP

Jim Siler's experience is typical of long-time Morris owners. Heavy, rugged, dependable Morris equipment has been the first choice for abrasive-handling pumps for nearly 90 years.

Morris pumps are engineered to give uninterrupted, year-in-year-out handling of solids at any consistency that is fluid. Some important features of the new Morris GA and GAF Dredge Pumps:

Oversize Shaft and Bearings — easily withstand vibration and shock loads for longer on-the-line service and lower maintenance costs.

Heavy Volute Casing — thicker at points of greater wear, plus a choice of various alloys to increase internal life.

Economical Impeller Design — insures even wear. An enlarged suction shroud maintains effective pressure balancing and high efficiency.

Write today for a complete catalog, or better still, let our engineers help you select the right pump size for your particular needs. No charge or obligation.

MORRIS MACHINE WORKS
Baldwinsville, N. Y.
Sales Offices in Principal Cities

MORRIS *Centrifugal Pumps*

Industry Personalities

The appointment of JOHN T. HUGHES as assistant sales manager of the New York sales territory of Universal Atlas Cement Company, effective October 1, was announced by Fred L. Wagner, vice-president, sales, eastern and southern region.

John T. Hughes

A native of Cambridge, Mass., Mr. Hughes was educated at Harvard and worked for two concerns in the Boston area prior to his enlistment in the Navy. After World War II he joined Universal at its Boston sales office.

KIRK E. HAZELTON and WILLIAM R. HOWELL have been named to positions of increased responsibility within the Permalite organization, according to an announcement released by officials of Great Lakes Carbon Corporation, Perlite Division.

To further develop Permalite's campaign to expand its sales and distribution in the United States and in Canada, Mr. Hazelton has been promoted from operations manager to assistant general manager of the Perlite Division. He will continue in charge of mining and processing, in addition to his new sales and administrative responsibilities. His headquarters are at Florence, Colo.

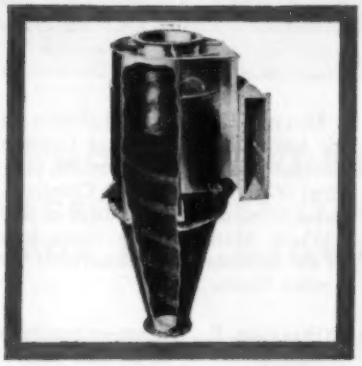
Mr. Howell, who was regional sales manager in the Chicago area, is now general sales manager of the Perlite Division. In addition to his new functions, Mr. Howell will continue as chairman of the new uses committee of the Permalite franchisees' marketing organization.

CALVIN C. HUFFMAN, CHAUNCEY LEWIS, and BEN E. GRIFFIN were recently elected to the board of directors of the Texas Portland Cement Company.

Mr. Huffman is vice-president and general counsel of Strategic Minerals, Inc., of America. Mr. Lewis is founder of the Cen-Tex Ready

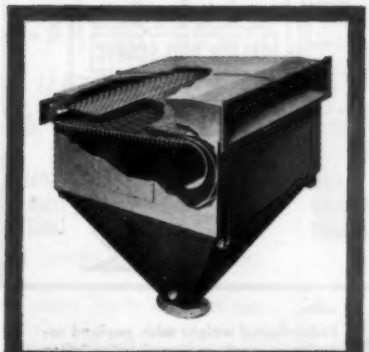
Electrode Breakage is no problem in Buell "SF" Electric Precipitators

SPIRALECTRODE
gives maximum continuous emission without weight... Minimizes breakage.
ORDINARY ELECTRODE
weighted to maintain center position between plates.. No "give."



Buell Cyclones offer two "extra-efficiency" advantages: (1) exclusive shave-off which harnesses double-eddy and puts it to work, and (2), large diameter design which eliminates clogging.

Besides eliminating efficiency drops and "shutdowns" due to electrode breakage, Buell's unique Spiralectrode permits higher and more constant emission, extra efficiency. Also, Continuous Cycle Rapping—another Buell exclusive—keeps electrodes constantly clean for maximum performance!



Buell's Low Resistance Fly Ash Collector combines top efficiency with low draft loss, for natural or forced draft installations. Ideal for boilers from 100 to 2000 BHP.

For more specific data about Buell's *extra efficiency*, write Dept. 18K, Buell Engineering Company, 70 Pine Street, New York 5, N. Y.

buell

MECHANICAL ELECTRICAL *Experts at delivering Extra Efficiency in* **DUST COLLECTION SYSTEMS**

Mix Concrete Company, Temple, Tex. Mr. Griffin is a prominent Dallas, Tex., financier.

RAYMOND A. HEINDL, chief of the Refractories Section of the National Bureau of Standards and an internationally known ceramist, retired on July 31, 1955, after 32 years of service.

Mr. Heindl came to the Bureau in 1923, as a member of the refractories section of the Mineral Products Division, and in 1927 became section chief, a position he held until his retirement.

LAWRENCE A. ROE has been appointed minerals beneficiation engineer by the Engineering Division of International Minerals & Chemical Corporation, as announced by Thomas M. Ware, vice-president in charge of the division. He will be a member of the Engineering Division's Chemical Engineering group under the direction of John G. Kronseder.

Mr. Roe was previously associated with the Bjorksten Research Laboratories, Madison, Wis., in a similar capacity. Other assignments were with the Ore Research Division of the Jones & Laughlin Steel Corporation, the Minerals Beneficiation Division of Battelle Memorial Institute, and the Trona, Calif., plant of the American Potash & Chemical Corporation.

CAPTAIN JOHN LUCHOW, marine superintendent of the Marquette Cement Manufacturing Company's river fleet, has retired.

Captain Luchow had been with the firm for nearly 26 years, and had had some 20 years of riverboat experience before accepting the Marquette position.

D. K. ARCHER has been named plant manager of the Niles, Ohio, plant of the National Gypsum Company. JOHN STAPLER, former manager of the Niles plant, was promoted to the post of manager of the firm's asbestos, cement, and metal products plants.

JOHN L. DOBELBOWER was recently appointed to the newly-created position of manager of the Slag Division of the Warner Company, Philadelphia, Pa. He will have general supervision of slag and blacktop operations, and will be responsible for the sales of the materials produced. Mr. Dobelbower will report to Irving Warner Jr., general manager of the Morrisville area.

RICHARD A. GRANT, former head of the Oil Producers Agency, has been elected a vice-president of the California Portland Cement Company. He was also appointed assistant to the president.

MELVIN H. BAKER, chairman of the board of the National Gypsum Company, and CHRIS DOBBINS, president of the Ideal Cement Company, have been named members of the 1955-56 Manufacturers Committee of the Chamber of Commerce of the United States.

WALLACE R. WELDMAN has been named to the newly-created post of assistant to the vice-president in charge of dealer sales for the United States Gypsum Company. Mr. Weldman was formerly district sales manager in Philadelphia.

The Cleveland Quarries, Amherst, Ohio, announces the election of DR. JACOB O. KAMM as president. He also was elected president of the company's wholly-owned subsidiary, Silica Chemicals. Previously, Dr. Kamm served as executive vice-president of both firms.

Boost your payloads and your profits ...with Galion Duo-scopic hoists

HAUL UP TO 1,500 BONUS POUNDS EVERY TRIP

Duo-scopics are engineered to eliminate unnecessary waste weight and to move a greater portion of hoist, body and load weight forward off the truck's rear axles.

What's more, the weight-saving construction of Galion's matching heavy duty contractor's dump bodies further reduces profit-stealing unproductive waste weight.

Because of Galion's combined weight reduction and relocation, you can add extra profit-making payload weight to your truck's rear axles *without exceeding legal weight limits!*

BODY, HOIST AND LOAD WEIGHT SHIFTED AHEAD
1500 LBS EXTRA PAYLOAD HERE
GALION DUO-SCOPIC
LEGAL LOAD LIMIT
LEGAL LOAD LIMIT

Model 66381 forward mounted Duo-scopic hoist, capacity 22 tons. Center or outrigger mounting optional.

Redistributed weight adds payload capacity to truck equipped with Galion Duo-scopic hoist! Truck's gross weight capacity is used to fullest, most profitable advantage. With conventional body and hoist, no extra payload can be carried. Body, hoist and load weight is concentrated on rear axles—high capacity of front axle is not used.

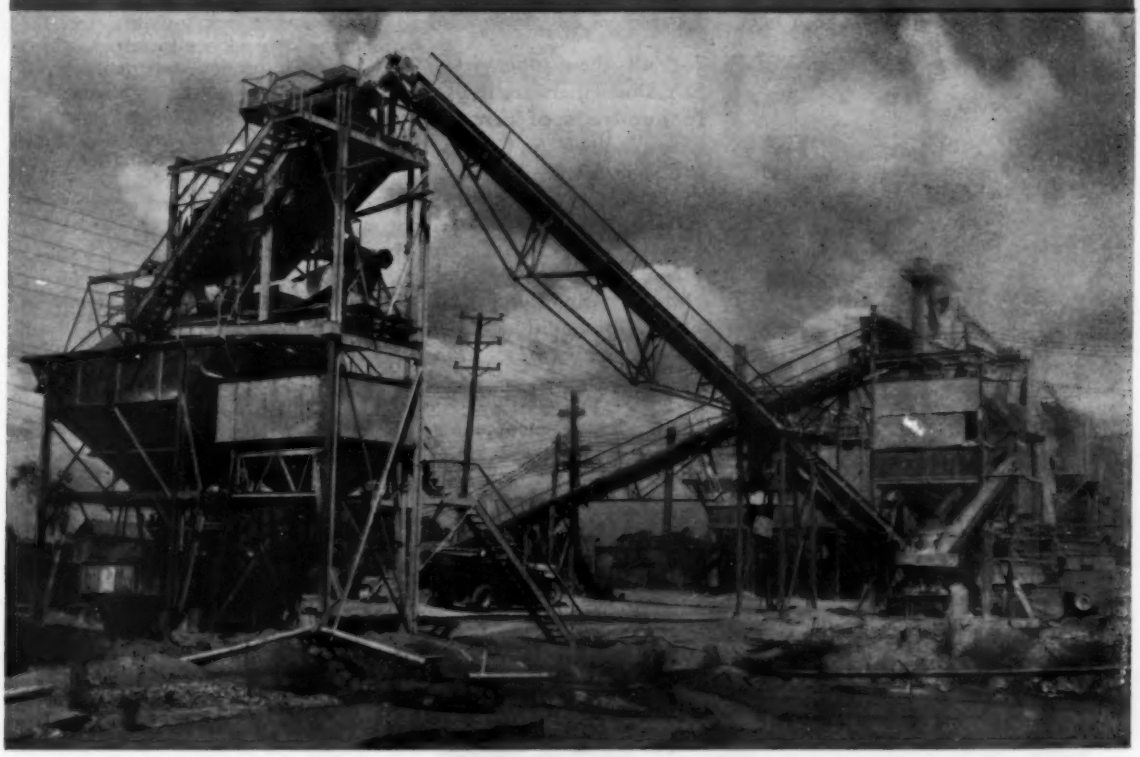
Your Galion distributor has all the facts. Phone him today!

THE duo-scopic GALION ALLSTEEL BODY COMPANY • GALION, OHIO

AA-1035

SECO SCREENS "PUT IT THROUGH"

AT FRONTIER STONE PRODUCTS, INC. LOCKPORT, N. Y.



SMOOTH, TROUBLE-FREE SECO SCREENS KEEP STONE *UP TO SPECS* FOR FAST GROWING PRODUCER

The big, modern plant of Frontier Stone Products, Inc. at Lockport, New York is a model of production efficiency. And being high production minded, they have chosen six Seco Vibrating Screens to handle the production of stone to N. Y. State specs. As Bob Maxwell, plant superintendent for Frontier says, "Our Seco Screens are very dependable."

SEND FOR NEW SECO CATALOG #204

SECO

TRUE CIRCULAR ACTION

VIBRATING SCREENS

EFFICIENT SCREENING MEANS BETTER PROFITS

Today's demands for cleaner, more uniform sand, ag lime, gravel and stone are bringing increased sales and greater profits to operators with Seco Screens on their jobs. How about you? Let Seco engineers help you screen it right. Over 350 models.

Write, Wire, or Phone

SCREEN EQUIPMENT CO., INC.

Buffalo 25, N. Y.

WHERE SLY COLLECTS DUST IN CEMENT MILL OPERATIONS

CRUSHING

GRINDING

SCREENING

SEPARATION

FEEDING

CONVEYING

ELEVATING

PACKAGING

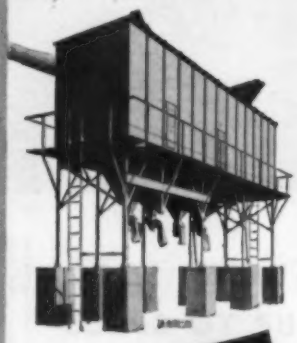
SILO FILLING

BULK LOADING

For all these operations SLY Dust Filters are in use in hundreds of cement plants in the U. S., Canada, Mexico, South America, Cuba, Puerto Rico, Greece, Israel and other countries.

Made in various types and sizes to fit air volumes and operating conditions, SLY Dust Filters *get all the dust.*

SLY has rendered engineering service to cement plants for over 35 years. This valuable experience is available to you. Let's discuss *your* dust problem.



SLY—the most widely used Dust Filters in the Cement Industry.

Designers and Manufacturers of: Dust Control Systems, Blast Cleaning Equipment, Tumbling Mills, Industrial Ovens.

ASK FOR BULLETIN 98

THE W. W. SLY MANUFACTURING CO.

SINCE 1870

Visit Our Booth at the CHEMICAL SHOW Philadelphia, Dec. 5

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Please send me your Bulletin 98

NAME.....

STREET.....CITY.....STATE.....

W. J. STEINMETZ was recently named sales engineer for Virginia by the United States Gypsum Company. Mr. Steinmetz has been with the firm since April, 1954.

GLEN F. KEITHLEY has been promoted from director of materials and transportation of the National Gypsum Company to the position of service director.

In his new position, Mr. Keithley will assume responsibility for the consolidated service functions, which include inspection and quality control, materials and transportation, industrial relations, and medical functions.

Assignment of C. B. Cox to the position of assistant director of materials and transportation was also announced.

WALLACE R. WEIDMAN has been named to the newly-created post of assistant to the vice-president in charge of dealer sales for United States Gypsum Company.

Obituaries

GEORGE J. BANSE, 53, director of the Philadelphia Quartz Company, Philadelphia, Pa., died unexpectedly last month.

Mr. Banse became associated with Philadelphia Quartz as assistant treasurer in 1944 and was appointed secretary and director in 1952.

C. WILBUR MILLER, former president of the Davison Chemical Company, Bartow, Fla., and chairman of the board of the Jefferson Lake Sulphur Company, New Orleans, La., died in Baltimore on September 21, after a lengthy illness. He was 77 years old.

F. FENTON TAYLOR, 65, traffic manager of the California Portland Cement Company and an employee of the firm for more than 30 years, died recently at Los Angeles, Calif.

SHERMAN W. JOHNSON, proprietor of Texas Lightweight Products Company, Irving, Tex., died recently in a Dallas hospital after a brief illness. He was 47 years old. Mr. Johnson had operated Texas Lightweight Products for the last five years. He was a member of the Perlite Institute.

Why this feeder doesn't cave in

● The reason is simply this: *The* PIONEER-ORO *Feeder is the most rugged feeder ever built.*

Take a look at its massive pans . . . cast from a special wear-resistant manganese steel, heavily ribbed, reinforced, and all the way from 9/16" to 1" thick, depending on width of feeder. The pans are supported by heavy, closely-spaced manganese steel rollers, keyed 3 to a heavy diameter shaft. Each shaft turns in 3 heavy-duty bearings rigidly supported on the feeder frame.

Takes heaviest dump loads

The PIONEER-ORO is designed for the roughest, toughest feeding jobs on earth. It withstands the impact of the heaviest dump loads. It shrugs off abrasion from hard ores, slag, flintrock, granite, and other coarse, heavy materials.

But the mighty PIONEER-ORO offers more than sheer, brute strength. It is a smooth-running, finely engineered unit designed to deliver a constant flow of heavy, abrasive material, with a minimum of maintenance. Even preventive maintenance costs are low.

Rivetless pans overlap and interlock

Pans, for example, overlap and interlock to provide added stability and stop leakage and spilling. Upturned end flanges also reduce loss of material. Drive links are cast as an integral part of the pan, so there are *no bolts or rivets that can loosen.* Easily replaced link bushings need no lubrication.

Sprocket teeth are readily reversed or replaced without taking the sprocket hub from the shaft or even disconnecting the pans. Like all other wearing parts, these teeth are cast from special wear-resistant manganese alloyed steel.

Supporting rollers and shafts can be removed, too, without disturbing the pans.

OTHER FEATURES

1. Patented lugs in pan links remove dirt, make links self-cleaning.
2. Feeder can be made to run in either forward or reverse direction.
3. Available in standard widths up to 84", widths in excess of 84" by special order, and lengths as required.
4. Made with 6", 9", 12" or 15" pan pitch (depending on width) to fit available head room.

PIONEER-ORO FEEDER
Capacities in tons per hour

Travel per Min.	Width of feeder						
	30"	36"	42"	48"	60"	72"	84"
10'	74	108	147	192	300	432	588
15'	112	162	222	289	450	648	888
20'	148	216	294	384	600	864	1176
25'	186	270	368	482	750	1080	1472
30'	223	324	442	577	900	1296	1768

Ask Your Feeder Salesman These Questions

1. Are pans made from special manganese steel? How thick?
2. Are pans and links cast together so they are rivetless?
3. Can manganese parts be replaced without disassembling pans?
4. Will pans support themselves without rollers?

Closely-spaced manganese steel rollers keyed to oversize shafts, prevent sagging and distortion of pans.

Note the turned-up end flanges and corrugated surface of heavy-interlocked pans; also absence of rivets.

For further details and specifications regarding full line of PIONEER *Feeders, write Pioneer Engineering Works, Inc., Minneapolis 13, Minn. (subsidiary of Poor & Company, Chicago) or see your nearest* PIONEER *Distributor.*

BUY BOTH! HIGHER OUTPUT LOWER UPKEEP

Pioneer *Continuflo* EQUIPMENT

Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis 13, Minn.
Subsidiary of Poor & Company • Chicago
Please send information on equipment checked.

- ☐ GRAVEL PLANTS
- ☐ WASHING PLANTS
- ☐ MECHANICAL FEEDERS
- ☐ ROCK PLANTS
- ☐ BITUMINOUS PLANTS
- ☐ VIBRATING SCREENS
- ☐ JAW CRUSHERS
- ☐ APRON FEEDERS
- ☐ BUZZER SCREENS (LIGHT DUTY)
- ☐ ROLL CRUSHERS
- ☐ ORO FEEDERS
- ☐ CONTINUFLO CONVEYORS

*Name*_____
*Company*_____
*Address*_____
*City*_____ *Zone*____ *State*_____

STOP!

TOO FREQUENT SHUTDOWNS

Buy WIRE SCREENS THAT SERVE LONGER — STAY STRONGER

CLEVELAND WIRE SCREENS

... maintain rigid accuracy of openings.

... provide longer productive service.

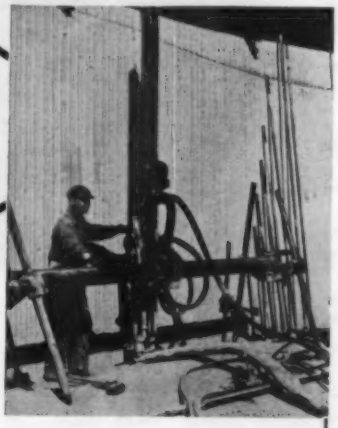
... are accurately woven of tough, yet ductile abrasion-resistant steel.

... increase your profits.

Send us your job requirements — our specialists are at your service.

THE CLEVELAND WIRE CLOTH & MFG. CO.
3576 E. 79 STREET · CLEVELAND 5, OHIO

Quarries EVERYWHERE *rely on Carbide Rok-Bits*



Carbide Rok-Bits—cross or chisel types—gauge sizes: 1¼- thru 4-in.

Alloy or carbon drill steel.

Intra-Set Drill Steel—carbide insert—gauge sizes: 1⅛- thru 2¼-in.

Carbide Whirli-Bit with new larger insert.

A real test of a carbide bit's stamina is provided by line drilling of hard, dense-grained granite. Yet there's one bit that does the job and does it well. It's Brunner & Lay Rok-Bits®—proved to do the best overall job, both cost-wise and performance-wise.

Make sure you've got them on the job. Stocks and service at Brunner & Lay plant nearest you.

Brunner & Lay Products

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9300 King St.
Franklin Park, Ill.

Brunner & Lay Rock Bit of Philadelphia, Inc.
2514 E. Cumberland St.
Philadelphia 25, Pa.

Brunner & Lay of Los Angeles, Inc.
2425 East 37th St.
Los Angeles 58, Calif.

Brunner & Lay, Inc.
150 Leslie St., Dallas, Texas

Brunner & Lay Rock Bit of Asheville, Inc.
Sweeten Creek Road, Asheville, N.C.

Brunner & Lay Corp.
660 N. Tillamook St., Portland 12, Ore.

HERRIED L. THOMPSON, former owner of the Thompson Sand & Gravel Company, Portland, Oreg., died recently in that city.

JAMES L. POWELL, 87, former owner of the Powell Lime & Cement Company, San Francisco, Calif., died on October 1.

Mr. Powell entered business in 1910 as a member of the Powell-Graham Company, which later became the Powell Lime & Cement Company. He retired in 1952.

FRED SCHMOEGER, former sales manager for the Marquette Cement Company, died recently in Sterling, Ill.

ALEXANDER MCKERNAN, 87, former director of the New Haven Trap Rock Company, New Haven, Conn., died recently.

Mr. McKernan had served with the company for 40 years before retiring in 1946. He was in charge of the North Branford quarry from 1914 to 1946.

ARTHUR H. LACKIE, credit manager of the Canadian Gypsum Company, died on September 2 in Toronto, Ont. Mr. Lackie was affiliated with General Steel Wares, Ltd., before joining Canadian Gypsum Co.

NORMAN DEWALL, 51, a salesman for the Penn-Dixie Cement Corporation, died recently at Milwaukee, Wis. Mr. DeWall had previously been a salesman for the Pulaski-Portland Cement Company.

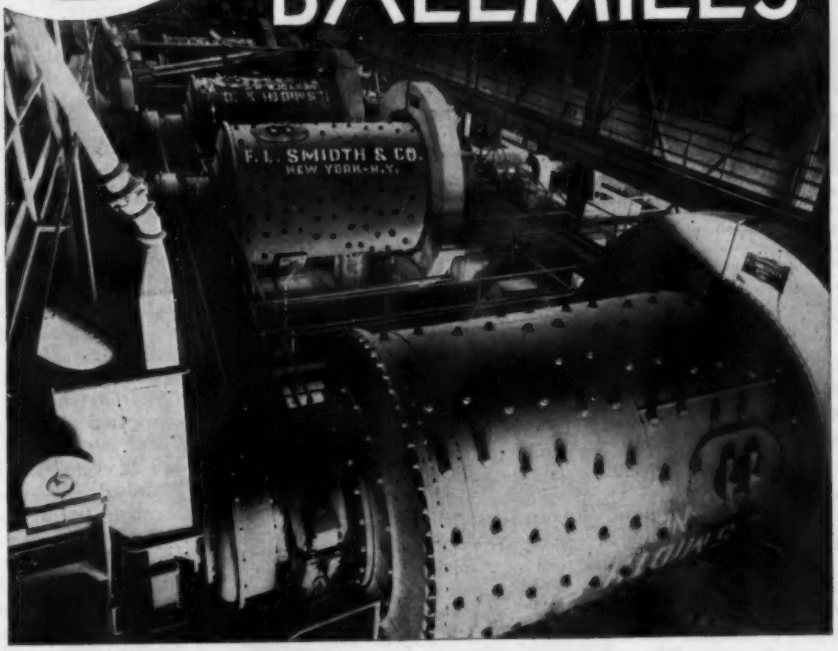
The Canadian Mineral Industry 1952, a book published by the Department of Mines and Technical Surveys, Ottawa, contains a group of reviews of the various minerals, metals, and fuels found in Canada. It covers the uses, development and expansion, and prices prevalent in each case. The book is available for $1.00 from Department of Mines and Technical Surveys, Ottawa, Canada.

Consolidated Rock Products Company, Azusa, Calif., has installed a Gyradisc crusher which can produce 100 tons of rock dust hourly for use in Conrock Base for road construction. Installation cost of the unit amounted to $70,000.

The United States Gypsum Company has leased space for offices and sales rooms in a new building in Colvin Ave., Albany, N. Y.

SMIDTH

BALLMILLS



WET OR DRY GRINDING

OPEN OR CLOSED CIRCUIT

ALSO AIR SWEPT FOR GRINDING AND DRYING

For Smidth Machinery apply to:

F. L. Smidth & Co., A/S
Vestergade 33,
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F. L. Smidth & Co.
11 West 42nd Street
New York 36, N. Y.

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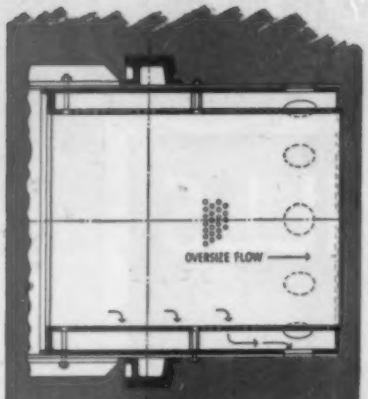
105, Piccadilly,
London, W. 1, England

F. L. Smidth & Cie France
80 Rue Taitbout
Paris (9e) France

F. L. Smidth & Co. of Canada, Ltd.
11 West 42nd Street
New York 36, N. Y.

F. L. Smidth & Co. (Bombay) Ltd.
42 Queen's Road
Bombay, India

Here's Way To Increase Your Screen Capacity 25%



This Yuba-built Olson trommel mounts in new or old screens, converts usually blanked out space into productive screening area without lengthening screen.

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Legal Decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

How to Solve Legal Problems

Not long ago I received from a lawyer representing a large cement corporation the following letter: "I have a pending suit involving one of our employees who signed the hospital 'Record of Admission' and agreed to pay his friend's hospital bills although the friend was on relief and welfare. Now, the legal question in my mind is whether our employee who signed this paper is liable for payment since he signed it to get his friend in the hospital on an emergency and really did not realize what he was signing. Do you have any similar cases which you can refer to me?"

Fortunately I located a higher court decision, decided last month, which held that under the above identical circumstances the hospital can collect the patient's hospital bill from a person who signed the hospital's admission sheet in which a clause recited that the signer would pay the patient's bill.

For example, in *Polk County Memorial Hospital v. Johnson,* 278 S. W. (2d) 640, the testimony showed that one Hydrick, 86 years of age, was admitted to Polk County Memorial Hospital and assigned to a room where he later died. The testimony showed that one Johnson was the closest friend Hydrick had. After Hydrick died, the hospital mailed a bill to Johnson showing that he was charged with $898.65 for services rendered to Hydrick. Johnson refused payment of the bill on the grounds that he believed the welfare agency would pay the bill. However, the hospital introduced before the court a hospital admission form which Johnson had signed. The last line bears the imprint, "I hereby agree to pay for services rendered to this patient." Johnson testified that previously the "welfare department" had paid Hydrick's hospital bills, and he believed that it would pay all of Hydrick's bills, and furthermore, that when he (Johnson) signed the sheet guaranteeing payment of Hydrick's hospital bills, he did so on an emergency and had no idea that he could be held personally responsible.

The higher court held that Johnson must pay Hydrick's hospital bill of $898.65 to Polk County Memorial Hospital, saying:

"This is a case where a man, Johnson, whose charitable attitude and goodness of heart created a situation from which he can not be legally extricated. Since appellee's (Johnson's) signature to the Hospital Record of Admission has been fully established, it was not procured through fraud, (and) the issue is one of legal determination. In all probability appellee (Johnson) felt that the welfare department would pay. But these were matters between Johnson and the agencies (which) he thought could be relied upon for protection."

Therefore, it is quite apparent that if a person signs a contract or hospital record of admission to the effect that he will pay the hospital's

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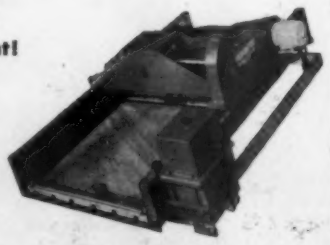

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charges for services rendered and supplied to the admitted patient, such person automatically becomes absolutely obligated to pay the hospital's charges, irrespective of the fact that the patient is on relief or has been in the past supplied regularly with necessities of life by the welfare department of the state, county, or city.

Engineer Approved Work

A reader asked this question: "If a contractor proves that he performed work according to specifications furnished by a city, can the contractor be held liable in damages for defective work?"

The answer is: Yes, the contractor may be held liable if the city proves that the specifications were incorrect or defective, and the contractor should have known by the application of reasonable judgment that the work would be unsatisfactory if he followed the specifications. On the other hand, if the city engineer approves the work, the contractor will not be liable although the specifications are somewhat defective.

For instance, in *Las Vegas Development Company v. Neighbors,* 171 Pac. (2d) 962, it was shown that a concrete contractor took a contract from a large development company to construct concrete streets and curbs. About five months later the work he had done was condemned by the city. The development company sued the contractor to recover the money it had paid the contractor, plus heavy damages.

During the trial the contractor proved that before starting the work he had consulted the city engineer, who assigned one of his deputies to watch the work during its progress to see that it was done according to specifications furnished by the development company. The deputy approved the mixture being used and expressed approval of the work.

In view of this testimony the higher court refused to hold the concrete contractor liable, saying that the defective work was due to the negligence of the development company, which furnished the specifications, and the city engineer who approved the work.

Liable on Implied Guarantee

Here is another question: "If a seller of building materials furnishes to a contractor defective materials, can the contractor recover damages from the seller who proves that the materials were approved by a person or agency specified in the contract?" According to a late higher court decision the answer is yes.

For illustration, in *Greenland Development Corporation v. Allied Heating Company,* 35 S. E. (2d) 801, the testimony showed that a contractor commenced the construction of 75 small dwelling houses. The contractor purchased certain heating units for the buildings on a purchase contract which contained this clause: "Seller guarantees all materials . . . for one year against defective material and workmanship. One year for service. Subject to F. H. A. approval."

The F. H. A. approved the units. Trouble soon developed in most, if not all of the units, and the contractor sued the seller for damages on the contention that the seller had breached an "implied warranty" that the heating units would give "reasonably satisfactory" service.

During the trial the seller argued that he could not be held liable in damages on an "implied" warranty because the written contract specified that he guaranteed the materials against defects for only one year, and further that the F. H. A. had approved the units.

In this respect the higher court

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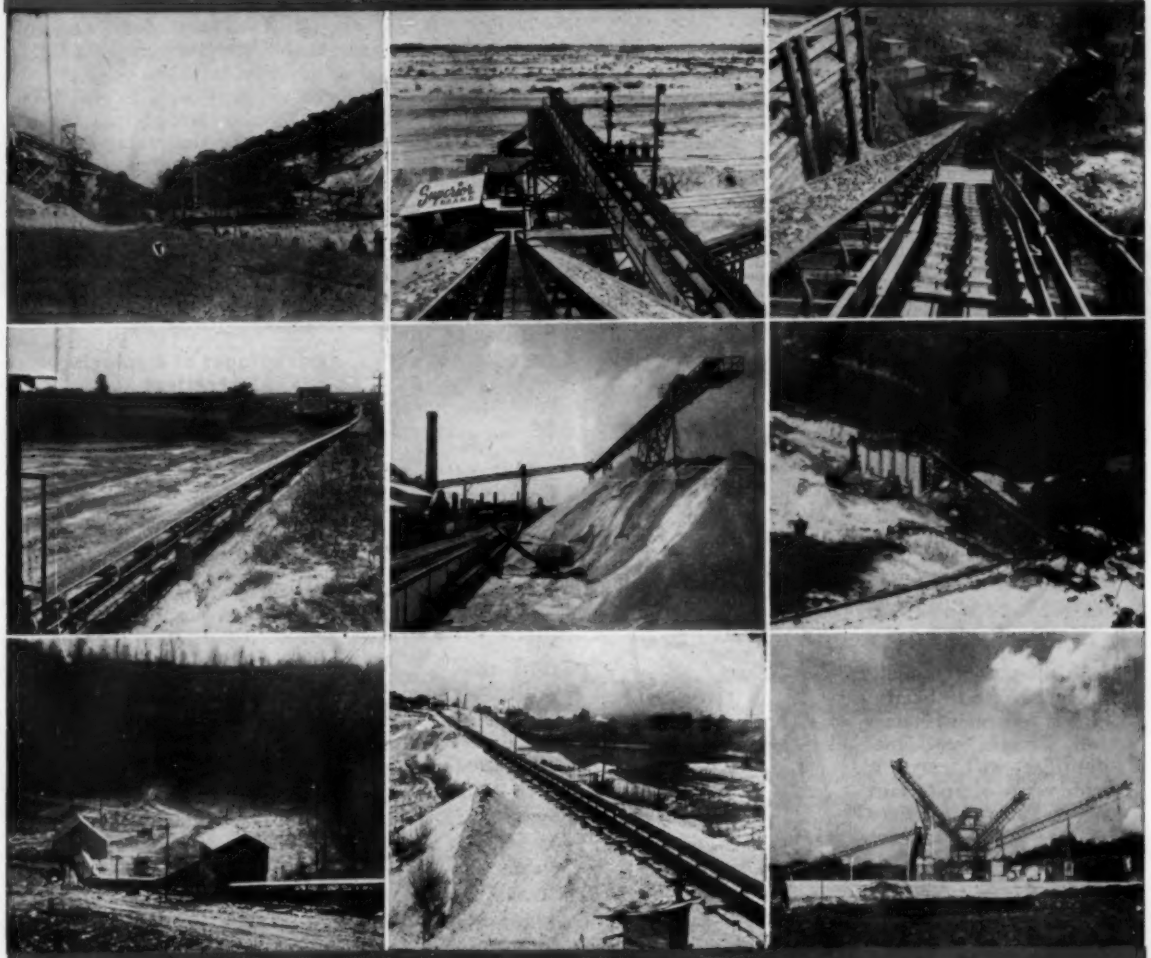

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held that the seller "impliedly" guaranteed that the units would be reasonably suitable for the purpose of heating the houses. Also, although the written contract between the buyer and seller contained the provision that the installation of the heating unit was "subject to F. H. A. approval," the higher court held the seller liable for defective materials, notwithstanding the F. H. A. approved the defective heating units.

Therefore, it is quite apparent that a seller "impliedly" guarantees that his product is reasonably worth the purchase price and also that the merchandise is reasonably suited for the intended purposes of the buyer. This is so although the contract contains a clause to the effect that the seller guarantees the merchandise only for a limited period of time, or the contract states that the merchandise is acceptable if approved by a specified person, corporation, or agency.

Implication of Purchaser

Recently a court held that if a purchaser accepts merchandise without complaint, he cannot refuse to pay for the materials at the billed price. In other words, the courts assume that, under these circumstances, the purchaser implies that he is satisfied and has no pending complaint.

For example, in *Murtishaw v. Taylor Company*, 18 So. (2d) 196, it was shown that a buyer and seller had entered into an oral contract by the terms of which the purchaser agreed to purchase a large quantity of crushed rock at a specified price per cubic yard. The purchaser accepted several deliveries of the rock, and then litigation arose over payment. The purchaser contended that a cubic yard of rock contained 3,000 lb., but the seller sued the purchaser to recover payment on the basis of 2,700 lb. to the cubic yard.

The higher court rendered a verdict in favor of the seller because the evidence showed that at no time was the delivered rock measured by the purchaser, and further that the purchaser had not complained about the bills, which indicated that he "impliedly" agreed that each cubic yard of rock weighed 2,700 lb.

Advantages of Employing Architect

This important legal question often arises: "What are the advantages of a property owner employing an architect to prepare plans and specifications and supervise the construction of a building? In other words, does this proof tend to relieve the property owner and the contractor from future damage liability for injuries to persons and private property caused by defective construction?"

A review of leading higher court decisions discloses that, generally speaking, the answer to this question is in the affirmative.

Modern higher courts consistently hold that a property owner is relieved of liability in damages for injuries resulting from defective construction, whether or not the architect was negligent in preparing the plans and supervising the construction work, provided that the architect was competent.

For example, in the leading case of *Burke v. Ireland*, 59 N. E. 914, it was disclosed that the owner of a lot employed a competent architect to draw plans and specifications and supervise the construction of a building on the property. Unknown to the parties, an abandoned cistern was concealed in the lot and the contractor, employed by the property owner, built the foundation for the center column of the building on the edge of the old cistern. The foundation was not inspected by the architect, and as a result of this negligence the building collapsed, causing the death of many persons.

The dependents of the deceased persons filed suit for damages against

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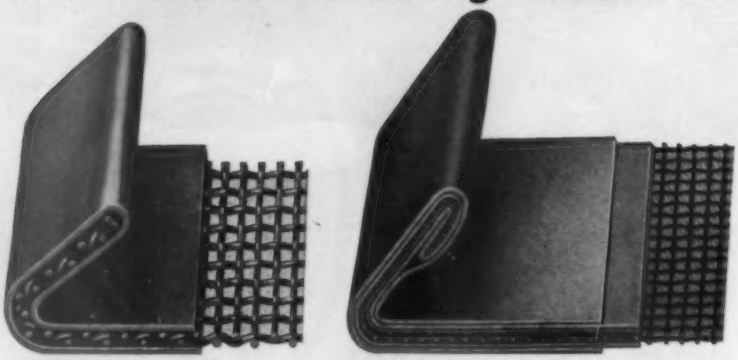

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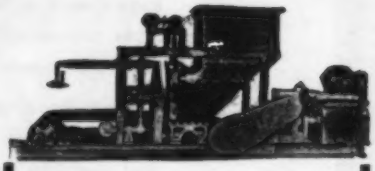

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the property owner. Although the lower court held the property owner liable, the higher court reversed this verdict, saying:

"In this case the owner was not competent himself to plan the building which he desired to erect. He was not competent to instruct or superintend the construction. If he had attempted to do any of these things, it may be that he could be held responsible for the results of the accident."

For comparison see *White v. Wilson,* 55 N. E. (2d) 221. Here it was shown that a theatre patron who was injured sued the theatre owner for damages, alleging that the theatre structure was defective and dangerous.

The higher court held the theatre owner not liable because the testimony showed that he had employed a competent architect to design and supervise the construction of the modern theatre building.

And, again, see *Fox v. Ireland,* 61 N. Y. S. 1061, in which a property owner entered into a contract with a contractor for the construction of a large building to be erected according to the plans and specifications prepared by an architect, who also agreed to superintend its construction.

Later the building collapsed because a weak foundation had been laid upon insecure ground. Various persons were seriously injured. They sued the building owner for damages. The testimony proved that the architect did not properly inspect the work and that this neglect was the proximate cause of the injuries.

Furthermore, the building owner proved that he relied entirely upon the efficiency of the architect, and that he did not interfere with the discharge of the architect's duties. In view of this testimony, the court held the building owner not liable to the injured persons saying:

"This case is to be disposed of by considerations relating to the competency of the architect and the right of the defendant (owner) to rely upon the skill and fidelity of the architect".

Notwithstanding the above explained law, neither a contractor nor an owner can avoid liability for defective construction work on proof of employment of an architect, unless the testimony proves that the architect was experienced and "competent".

This same rule of law is applicable where the testimony shows that a property owner employed an experienced and competent contractor to perform construction work which

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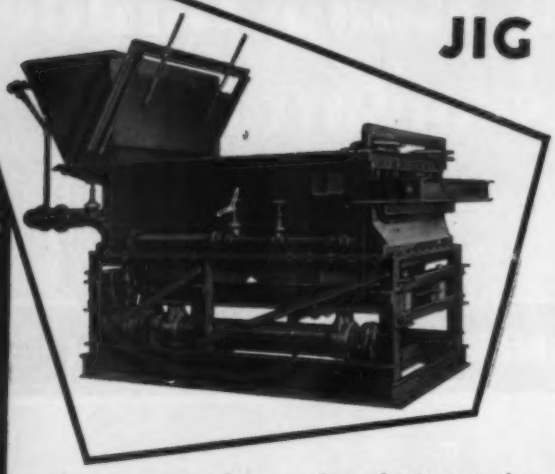

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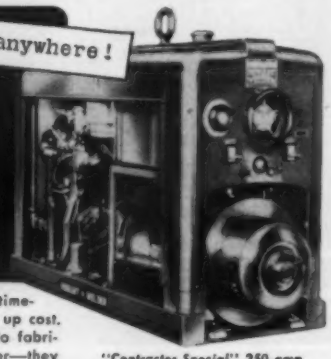

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proved to be defective, dangerous, or causing harm to innocent persons. Ordinarily the courts will relieve the property owner from future liability. Conversely, if a contractor carefully follows plans and specifications prepared by a competent architect, and injuries are effected subsequently because of defective construction work or design of the building, the contractor is relieved from liability. The architect is personally liable if the testimony shows that the faulty construction resulted from negligence or want of ordinary care and good judgment on the part of the architect.

Law of Dangerous Machinery

An operator of a large quarry asked this question: "When may an employer be relieved of liability if an employee is injured while operating dangerous or defective machinery?"

According to leading higher court decisions, the law is established that when a workman accepts dangerous work, he assumes the ordinary risk of dangers, provided that the employer is not negligent in maintaining the machinery in first-class condition.

If an employee observes that machinery is defective, he is bound to notify his employer immediately; otherwise the employer is relieved of liability for injuries to the employee. If an employee notifies his employer that machinery or appliances are in need of repairs, the employer is obligated to attend immediately to having the repairs made. If he requests the employee to continue working until the repairs are made, the employer automatically assumes liability of injuries to the employee. On the other hand, an employee who realizes the danger and continues with his work naturally assumes responsibility for future injuries caused by the defective machinery or appliances with which he works.

For illustration, in a recent case an employee reported to the superintendent that a belt needed repairing. The superintendent promised that the necessary repairs would be made within a couple of hours. The employee continued to operate the defective machine after the two-hour period had expired, without again notifying the superintendent or the employer. The belt broke, and the employee was severely injured.

In subsequent litigation the court held the employer not liable and explained that if an employee reports a defect of machinery and the employer promises that it shall be repaired within a specified period, the

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employer is not liable for damages if the employee on his own accord continues to operate the unrepaired and defective machinery.

In another case it was shown that an employee reported that a concrete mixing machine was defective. The foreman ordered him to proceed with his duties, promising that the machine would be fixed during the noon hour. The employee was injured before the noon hour, and the court held the employer liable for the injuries he sustained.

Driver Disobeys Instructions

Recently this question was asked: "Is the employer of a truck driver liable for injuries caused by the carelessness of the driver while the latter is disobeying instructions previously given to the driver by the employer?"

The law is well established that a motor-truck owner is not liable for an injury caused by a careless driver, if the injury was effected while the driver acted in disobedience to the expressed or implied instructions of his employer. This is particularly true if the driver deviates from the shortest route for his own purposes.

For illustration, in *Green v. Lot Rock Company,* 146 Atl. 834, it was disclosed that a motor-truck driver's employment ceased at noon on Saturday. Shortly before noon the driver started to take the truck to the garage. Instead of going directly to the garage he went to his home, changed his clothes, and then at 1 p.m. re-entered the truck. While driving carelessly and recklessly toward the garage, he struck and seriously injured a pedestrian, who sued the employer for damages.

In view of the fact that the injury occurred when the driver was acting in disobedience to his employer's implied instructions by deviating from the shortest route from his employer's warehouse to the garage, the court held the employer not liable, stating the following important law:

"The rule is that for all acts done by a servant in obedience to the express orders or directions of the master, within the scope of his employment, and for acts in any sense warranted by the express or implied authority . . . the master is responsible; for acts which are *not* within these conditions the servant alone is responsible. . . . A deviation by the servant from the scope of his usual employment, when done by the express or the implied direction of the master for his business, will not relieve the master from liability for the negligent act of the servant, since he has extended the scope of the servant's employment to the new business. . . . When the servant is using the automobile for his own purposes, and without the master's permission or consent . . . no liability attaches to the master for the servant's negligent operation of the car during this period."

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Enoch R. Needles Elected 1955-56 President of A.S.C.E.

After taking a mail ballot among its more than 38,000 members, the American Society of Civil Engineers has announced at its headquarters in New York the election as president of Enoch R. Needles of that city, senior partner of Howard, Needles, Tammen & Bergendoff. Mr. Needles, who was installed on October 26 at the Society's national convention in New York, will serve for one year. He will succeed William Roy Glidden, of Richmond, assistant chief engineer of the Virginia Department of Highways.

Two vice-presidents and seven members of the board of direction were also installed on October 26. The new vice-presidents are Frank A. Marston, Boston, consulting Engineer with the firm of Metcalf & Eddy, and Glenn W. Holcomb, Corvallis, Oreg., professor and chairman of the department of civil engineering, Oregon State College. They will serve for two years.

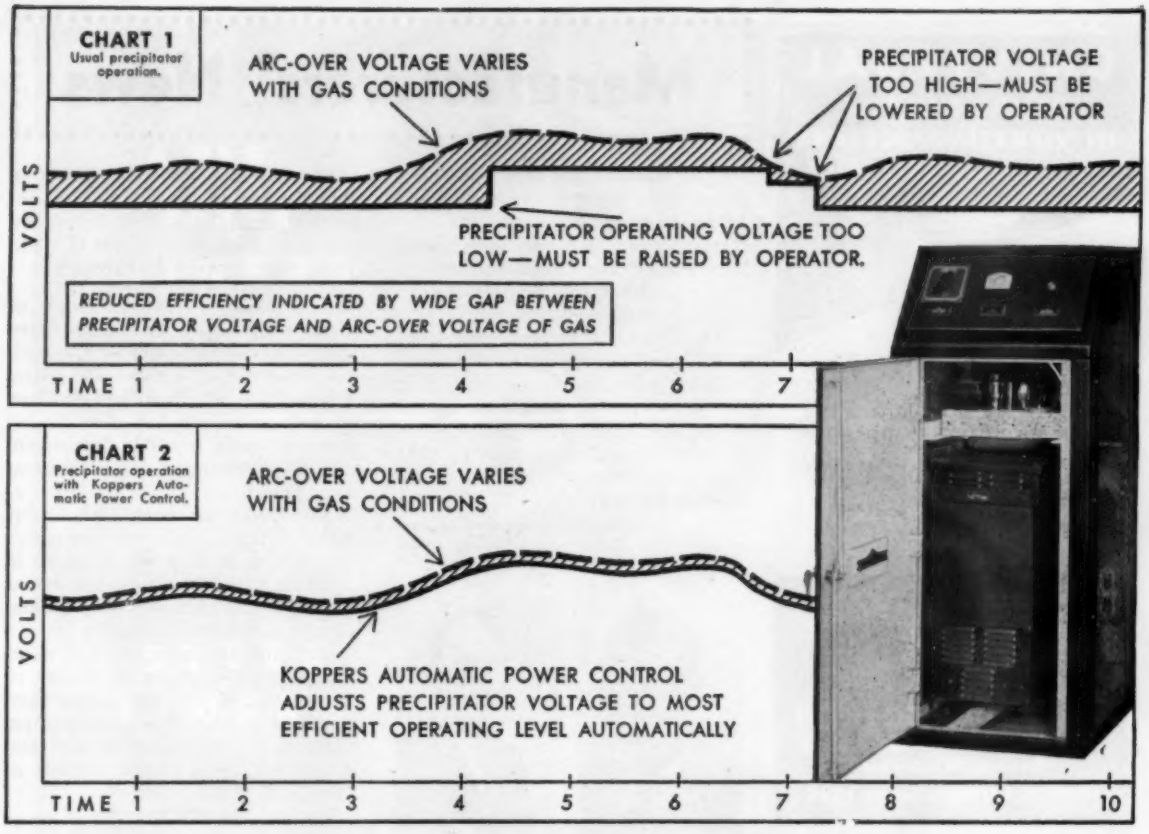


CHART 1
Usual precipitator operation.
ARC-OVER VOLTAGE VARIES WITH GAS CONDITIONS
PRECIPITATOR VOLTAGE TOO HIGH—MUST BE LOWERED BY OPERATOR
VOLTS
PRECIPITATOR OPERATING VOLTAGE TOO LOW—MUST BE RAISED BY OPERATOR.
REDUCED EFFICIENCY INDICATED BY WIDE GAP BETWEEN PRECIPITATOR VOLTAGE AND ARC-OVER VOLTAGE OF GAS
TIME 1 2 3 4 5 6 7
CHART 2
Precipitator operation with Koppers Automatic Power Control.
ARC-OVER VOLTAGE VARIES WITH GAS CONDITIONS
VOLTS
KOPPERS AUTOMATIC POWER CONTROL ADJUSTS PRECIPITATOR VOLTAGE TO MOST EFFICIENT OPERATING LEVEL AUTOMATICALLY
TIME 1 2 3 4 5 6 7 8 9 10

New Koppers Power Control automatically insures maximum Electrostatic Precipitator efficiency

Now Koppers enables you to get *peak* gas cleaning efficiency from your electrostatic precipitator at a minimum of operating maintenance—with the new Koppers Automatic Power Control.

This compact, cabinet unit utilizes electronic controls to automatically maintain the proper voltage to best ionize the gas. As gas conditions vary —an occurrence even under the most constant industrial operations—it automatically adjusts the voltages to the most efficient level for solids removal. This reduces wasteful "sparkover" and enables the precipitator to operate continually at peak efficiency voltage without frequent "trip-outs."

What is more, the new Koppers Automatic Power Control eliminates the need for constant personal attendance. Completely self-contained, easy to install, it quickly repays initial cost with savings in man-hours and operating efficiency.

The new Koppers Automatic Power Control is another engineering advance in a series that has won industry-wide confidence for Koppers Electrostatic Precipitators. Keep Koppers' ability to serve *you* in mind. For information or assistance in solving your gas cleaning problem, send this coupon.

KOPPERS®

METAL PRODUCTS DIVISION • KOPPERS COMPANY, INC. • BALTIMORE 3, MD. This Koppers Division also supplies industry with Fast's Couplings, American Hammered Industrial Piston and Sealing Rings, Aeromaster Fans, Gas Apparatus.

Engineered Products Sold with *Service*

ELECTROSTATIC PRECIPITATORS

KOPPERS COMPANY, INC., *Electrostatic Precipitator Dept.,* **331 Scott St., Baltimore 3, Md.**

☐ I am interested in how the new Koppers Electrostatic Precipitator Automatic Power Control can help me to more efficiency and greater savings in gas cleaning.

☐ I am interested in an analysis and recommendations for my operation. I understand I am under no obligation.

Name.....

Address.....

City..... Zone..... State.....

UNIVERSAL
OFFERS THE BEST
IN VIBRATING SCREENS
AT THE LOWEST PRICE

Before you buy, be sure to get a copy of the new UNIVERSAL Catalog #1501

There's a model to fit your particular requirement, priced within the smallest budget.

Write today for free catalog #1501

UNIVERSAL
VIBRATING
SCREEN CO.
Racine, Wisconsin
Quality Screens Since 1919

Manufacturers' News

C. C. Dunlop has been appointed as service engineer at the Iowa Manufacturing Co. factory in Cedar Rapids, Iowa. He will assist Boyd Titsworth, service manager, on all matters pertaining to service for Cederapids products.

Mr. Dunlop's 20 years experience with Iowa has given him a well-rounded service background and full knowledge of Cedarapids equipment. He joined the company in 1936 as a serviceman, and in 1941 was promoted to the position of assembly foreman. From 1947 to his present appointment as service engineer, his duties have been those of chief inspector in the factory.

C. C. Dunlop

H. Wayne Aden

The election of H. Wayne Aden as controller has been announced by Link-Belt Co., Chicago, Ill. He succeeds Franklin C. Schimpf, who is retiring after being with Link-Belt for 50 years.

Mr. Aden joined Link-Belt in 1942. After a period at the company's executive offices, he was transferred to the Caldwell plant in Chicago to head the accounting department. Later he performed the same function at the company's Pershing Road plant in Chicago. He has been assistant controller of Link-Belt since July of this year.

Mr. Schimpf joined Link-Belt in Philadelphia in 1905. Prior to becoming controller in 1948, he headed the accounting departments of Link-Belt's two plants in Indianapolis.

G. E. Burks, former director of engineering and research, has been named a vice-president of Caterpillar Tractor Co., Peoria, Ill. In his new position Mr. Burks will continue to give administrative direction to the company's research department and the engineering departments at four plants.

Mr. Burks has been with Caterpillar 26 years, joining the company's engineering staff at San Leandro in 1929. Earlier, he had worked a year with Western Harvester Co., at that time a Caterpillar subsidiary.

He came to Peoria in 1938 as assistant chief engineer in charge of engine design, and was named chief engineer in 1942. He was appointed director of engineering in 1953 and a year later was named director of engineering and research.

The Heil Co., Milwaukee, Wis., has recently appointed Irvin F. Nelis Associates, Houston, Tex., as distributor. Irvin F. Nelis Associates will represent Heil products in a territory including many parts of southeastern Texas.

The Heil Co. has also named Rivers Body Factory, P. O. Box 11146, Tampa, Fla., a distributor. The Rivers company will handle the sale of Heil truck bodies and hydraulic hoists, Colecto-Pak garbage bodies, and Colectomatic sanitary refuse units. Their territory includes the counties of Levy, Citrus, Sumter, Lake, Hernando, Pasco, Hillborough, Polk, Manatee, Hardee, Highlands, Sarasota, and DeSoto.

You're Sure
with Merrick

FOR Positive Controlled Feed by Weight of Sand Gravel, Lime Clinker, Gypsum or other materials to Process—

Use the Feedoweight

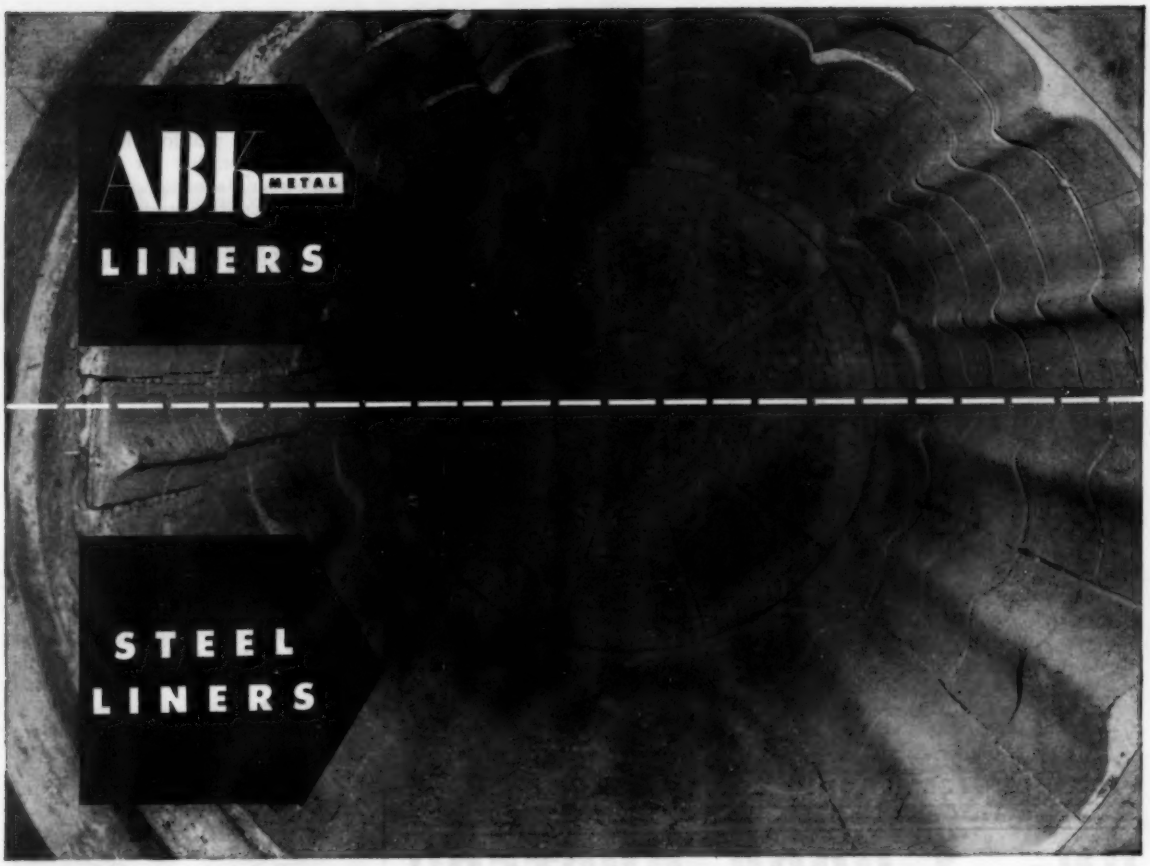
Merrick Scale Mfg. Co.
Passaic, New Jersey

for a firm grip . . . demand Allied BULLDOG

TRACTOR GROUSER RETREAD
- EXCLUSIVE DESIGN
- INCREASED TRACTION
- RE-LUG WITHOUT DISMANTLING
- WORK-HARDENING STEEL
- SCIENTIFICALLY "WELD-METALIZED"
- ANY SIZE OR SHAPE

Also . . . Steel Plate, Grader Blades, Special Cutting Edges, Pneumatic Tools, Traffic Signs and Sign Posts, Gutter Broom Wire and Fibre Brooms.

Territory open for agents and dealers.
ALLIED STEEL & TRACTOR PRODUCTS INC.
7835 Broadway • Cleveland 5, Ohio • U.S.A.



MILL TEST PROVES LONGER LIFE FOR ABK® METAL

This photo, taken in a three-compartment grinding mill, shows at the top: ABK Metal liners installed in 1948; at bottom: the *second* set of steel liner plates installed since then. Both types of liners took the identical rough treatment. The ABK Metal liners are still in good condition. It is estimated that, before requiring replacement, the ABK Metal liners will give from 3 to 4 times the service that liners made of other materials will give.

This performance, in a major cement manufacturing plant, is typical of the longer life that can be expected from ABK Metal liners in all grinding operations . . . in primary, secondary or tertiary stages . . . wet or dry grinding . . . rough stone or finished products.

An exclusive product of American Brake Shoe, ABK Metal is a nickel-chrome iron of controlled structure . . . a metal with extreme hardness (500-700 Brinell, as required) and exceptionally high abrasion resistance.

Cut your replacement, maintenance and down-time costs, increase your mill's efficiency . . . specify ABK Metal next time you need metal liners. Consult us on your specific requirements.

AMERICAN Brake Shoe COMPANY

3245

BRAKE SHOE AND CASTINGS DIVISION

230 Park Avenue, New York 17, N. Y.
109 N. Wabash Avenue, Chicago 2, Illinois

Baltimore • Chicago • Duluth • Houston • Los Angeles • New York
St. Louis • San Francisco • Toledo

FLEXCO

BELT FASTENERS and RIP PLATES

FOR HEAVY CONVEYOR AND ELEVATOR BELTS OF ANY WIDTH

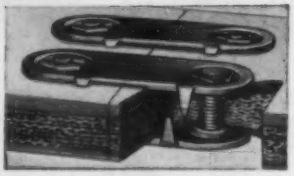
★ FLEXCO Fasteners make tight butt joints of great strength and durability.

★ Trough naturally, operate smoothly through take-up pulleys.

★ Distribute pull or tension uniformly.

★ Made of Steel, Monel, Stainless, Everdur. Also Promal top plates.

★ FLEXCO Rip Plates are for bridging soft spots and FLEXCO Fasteners for patching or joining clean straight rips.



Compression Grip distributes strain over whole plate area

Order From Your Supply House. Ask for Bulletin F-100

FLEXIBLE STEEL LACING CO., 4623 Lexington St., Chicago 44, Ill.

"No. 1 ROCK BUSTER"

specially designed for

QUARRY OPERATIONS

"Cape Ann" FORGED STEEL DROP BALL

- **RUGGED DESIGN**
- **GREATER IMPACT**
- **ECONOMICAL**

Used and approved by leading quarrymen everywhere, the "Cape Ann" Drop Ball is available in weights from 2000 to 12000 lbs.

It has a forged connecting link, protected by deep recess, for swivel or shackle. Strong alloy steel pin. Low cable replacements. Furnished complete as shown.

Full Details sent on request

Cape Ann Anchor & Forge Co.

Gloucester • Massachusetts

Angus J. O'Brien has been named to the newly created position of vice-president and director of engineering and manufacturing by Gar Wood Industries, Inc., Wayne, Mich.

In his new position, Mr. O'Brien will be responsible for all of Gar Wood's manufacturing and engineering activities. His promotion fills the gap left in the top management group by the recent retirement of George D. Shaeffer, vice-president, engineering.

Mr. O'Brien has been with Gar Wood Industries, Inc., as vice-president and director of manufacturing since 1949. He came to Gar Wood from Fisher Body Division, General Motors Corp. His early training was with the Ford Motor Co.

F. H. Williams has been named as manager of the railway department of SKF Industries, Inc., Philadelphia, Pa.

Mr. Williams started his engineering sales activities with the Chicago office of SKF in 1949 and was transferred to the Philadelphia headquarters in 1951.

F. H. Williams

James C. Mabe, Jr.

James C. Mabe, Jr., has been appointed manager of plant operations for the Chicago Pneumatic Tool Co., New York, N. Y. All manufacturing and engineering operations in the company's domestic plants at Utica, N. Y., Franklin, Pa., Fort Worth, Tex., and Garfield, N. J., will fall under his jurisdiction. He will headquarter at the company's head office in New York City.

Mr. Mabe, has been employed by the Douglas Aircraft Co., Inc., for the past 15 years. Since 1950 he has served as assistant factory manager at the Tulsa plant.

Appointment of South Texas Truck Equipment Co., Inc., 6 U. Latham, Houston, Tex., as distributors of Galion Allsteel products in the Houston area is announced by Galion Allsteel Body Co., Galion, Ohio. L. B. Rea, company president, will direct sales of the Galion line.

HOW TO BUY RUBBER HOSE

FOR EASY HANDLING ON TOUGH JOBS . . .

and get "More Use per Dollar"

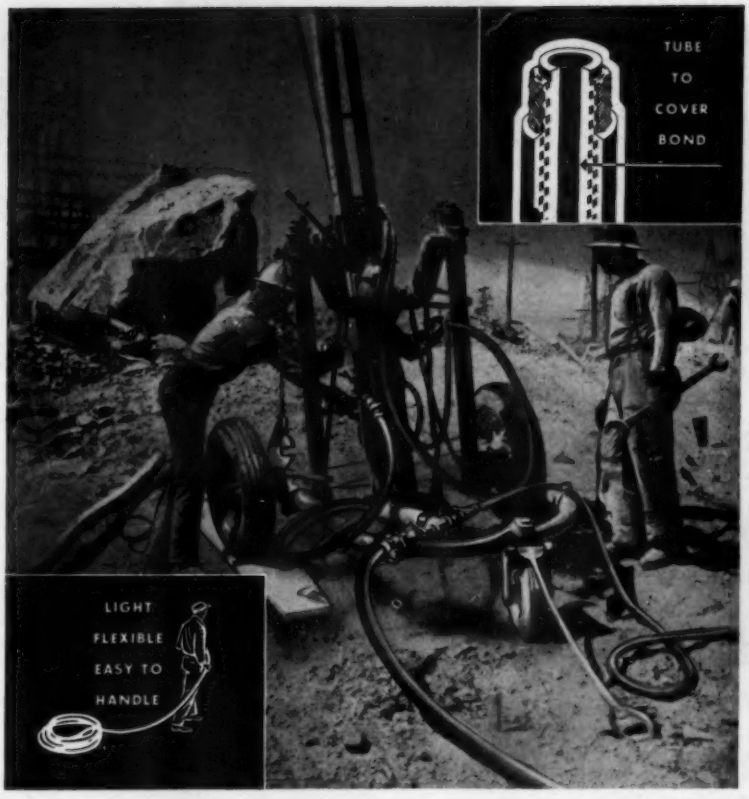
Select a light weight hose construction that is flexible and kink resistant for long-life dependability.

Hose that is light in weight—yet strong enough to safely withstand high pressures—is easier to handle. Men like it better and do more work with it. Look for a hose that is light, yet strong, for ease of handling.

If the hose you buy resists kinking you are assured maximum flow under all operating conditions. Hose that is mandrel-made, rather than molded in a pre-set coil, will coil and uncoil freely in any direction . . . eliminate points of strain at kinking points that can cause costly internal damage and rupture.

Make certain the hose is engineered for maximum flexibility . . . from tube to cover. Tube-to-cover flexibility prevents separation of cover, tube or strength member plies . . . reduces hose costs by increasing hose life.

Specify the one hose that gives you all these features . . . specify R/M Homoflex Hose.



HOMOFLEX HOSE

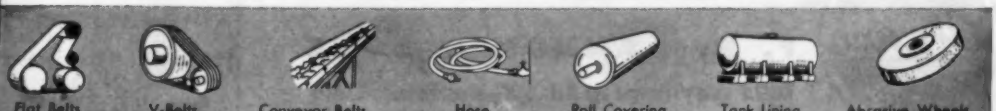
The unique construction of Homoflex Hose makes it easier to handle because it is light, has no pre-set twist . . . coils and uncoils easily without kinking. All unneeded bulk has been engineered out. An exclusive process creates a homogeneous cover, strength member and tube that are virtually inseparable to produce a hose construction that is extremely flexible, yet rugged and strong. Homoflex Hose does a better job under tough conditions . . . and it lasts longer. Inside and outside diameters are uniform.

Ask your R/M representative about types of Homoflex Hose for your operations. He can also tell you why other types of R/M Hose for general and special purposes last longer, too . . . give you "More Use per Dollar".

R/M

MANHATTAN RUBBER DIVISION—PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.



Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings Asbestos Textiles • Packings • Engineered Plastic, and Sintered Metal Products • Bowling Balls

Paul Duncan has been appointed Washington representative for H. K. Porter Co., Inc., New York, N. Y., and its thirteen divisions. He comes to Porter with a wide background of experience in the nation's capital. Most recently he has been with Selvage & Lee, Washington public relations counsel, specializing in legislative and government relations.

Mr. Duncan's other Washington associations have been as Director of Information for the State Department's Point Four Program; Assistant to Mike Di Salle, former Director of Price Stabilization; Administrative Assistant to Lister Hill, ex-Senator from Alabama; and Assistant to William H. Davis, one-time Director of Economic Stabilization.

H. K. Porter Co., Inc., has opened offices in the Trans Lux Bldg., 724 14th St., N.W., Washington 6, D. C.

The Electric Service Engineering Co., Joliet, Ill., has been purchased by H. K. Porter Co., Inc., New York, N. Y., it was announced by T. M. Evans, Porter's president. "Eseco," the trade name for Electric Service, specializes in the design and manufacture of complex electrical and electronic devices used in heavy industry and in certain government departments, including the armed forces. It will be known as the Eseco Division, H. K. Porter Co., Inc., and is the thirteenth within the Porter organization.

The present management of Eseco will continue with the new division. R. J. Cadorette, former president, will be executive vice-president in charge of operations. B. F. Pfeifer and R. W. Dixon will be vice-presidents in charge of sales and engineering respectively.

Peter B. Davies has been appointed assistant sales manager of Philadelphia Gear Works, Philadelphia, Pa. This is a new position with the company, created to meet the growth of sales volume in all product lines.

Mr. Davies has been a sales engineer with Phillie Gear since 1948. This new assignment will include sales administration of Philadelphia gears, gear reducers, Sphereflex couplings, fluid agitators and Limi-Torque valve controls.

Peter B. Davies

H. W. Hilker

H. W. Hilker, Los Angeles district office, Bailey Meter Co., Cleveland, Ohio, has been named manager of the company's Ceramics & Non-Ferrous Metals Division. He will coordinate the company's sales activities in these fields.

A registered professional engineer in California, Mr. Hilker is a member of the American Society of Mechanical Engineers and the Instrument Society of America. He has been a sales-service engineer in the Los Angeles office since 1946.

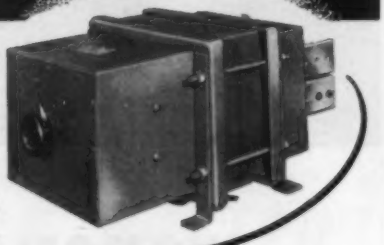
Frank M. Ewer, director of the Boston Burlap Dept. of Bemis Bro. Bag Co., St. Louis, Mo., has retired after 59 years of service with the company. He will settle on Cape Cod, where he has summered for many years.

Mr. Ewer, who is a vice-president and a director, joined Bemis in 1896. He was manager at San Francisco from 1906 to 1911, when he returned to Boston as assistant burlap buyer. In 1925 he became head of the burlap department.

LET THE RECORDS SPEAK!

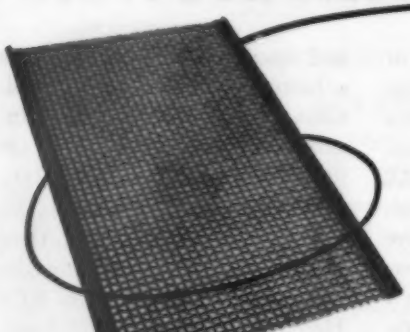
HANCO SCREEN HEATERS

ELIMINATE *Costly* SCREEN BLINDNESS



FASTER, MORE ACCURATE SIZING

HANCO electric heaters are engineered to meet top capacity requirements for heating **all** metallic screen cloth. Mechanical abuse such as "beating" or brushing can be **eliminated completely** when you install a HANCO electric heater. Treat your screens the modern way—get HANCO.



Available in five different assemblies. HANCO engineers have designed and constructed electrical screen heaters to fit YOUR make of screen. Note: Reduction in openings can be effected to meet ever changing specifications.

LOOK AT THESE FEATURES

Faster screening—faster processing means fewer "returns".

Elimination of mechanical abuse to keep screens open.

Longer screen life — no manual cleaning increases screen life up to 800%.

Fewer shut downs for replacement of worn screens.

HANCO quick change assemblies assure easy cloth changes.

Low maintenance cost. HANCO heaters are designed for heavy-duty service.

SEND FOR OUR COMPLETE BULLETIN

Hanco

F. R. HANNON & SONS

1605 Waynesburg Rd. S.E., Canton 7, Ohio

PIONEERS IN ELECTRIC SCREEN HEATING — FIRST IN THE FIELD OF LOW VOLTAGE AND HIGH AMPERAGE SCREEN HEATING

SPECIALLY DESIGNED for rugged conditions like this, Anaconda butyl-insulated Mine Power Cable delivers maximum service and safety.

OPEN PIT OR UNDERGROUND, Anaconda butyl-insulated Mine Power Cable offers exceptional mine water- and abrasion-resistance.

FOR YOUR PROTECTION—

We proved this power cable in our mines

Being miners ourselves, we know mining problems. As both miner and cable manufacturer we're able to do something about them—by *designing* cable to meet problems only miners can know . . . by testing this cable in *our own mines* under actual field conditions.

FOR MINE POWER CABLE

Our firsthand mine experience has helped us build a sturdy cable that cuts down-time. Butyl insulation gives this cable long-aging characteristics, improved resistance to moisture, ozone and heat. Neoprene jacket—rugged, tough—has real flexibility, and resists rock-cutting, impact, flame, sun, and corrosive mine water.

Your Anaconda Distributor has full facts and can help you choose the cable best suited to meet your needs. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y. 55322

*Trade Mark

ANACONDA®
MINE CABLE

FLAT-TWIN CABLE

Improved stranding, new insulation, new grounding wire, and neoprene jacket make this a superior cable for shuttle cars, continuous miners, loaders, drill trucks, cutters.

POWER CABLES

Anaconda Types W & G are rugged, sturdy and long-lived. Used for mine power, shovels, continuous miners, loaders, drill trucks, cutters.

SHOVEL AND DRILL CABLES

Securityflex* Types W and G are used with small shovels, self-propelled drill trucks, pumps and a-c mining equipment. For higher voltages, Type SH cables (shielded) are recommended.

SECURITYFLEX CORDS

Unexcelled for strength, wear resistance and long life. Type SO cords (heavy-duty) provide superior service on remote control and hand drills.

TROLLEY WIRE

FEEDER CABLE BARE OR INSULATED

TELEPHONE WIRE

SHOT-FIRE CORD

WELDING CABLE

As a public service to schools, social organizations, libraries, etc., The Colorado Fuel and Iron Corp., New York, N. Y., has made available eight 16mm sound color movies describing the production of steel, and important finished products. The manufacture of rails, wire rope, grader blades and reinforced concrete is pictured as well as the manufacture of products essential to the mining, agricultural and construction industries.

Suitable for all age groups, the selection includes a series titled "INDIAN PAINT" describing how iron ore was originally used by the Indians for war paint. Each of these films describes the process of steelmaking, and detail the manufacture of one or more steel specialty products.

All of these movies are available on a free loan basis, and can be obtained from The Colorado Fuel and Iron Corp., New York Advertising Dept., 575 Madison Ave., New York, N. Y.

Robert D. White has been named branch manager of Hamilton Rubber Mfg. Corp.'s activities in greater New York City. He was formerly sales manager of Armstrong-Bray & Co., Chicago, Ill.

FOR SALE

REASONABLE

GANTRY FRAME
AND CONVEYOR

- 50 H.P. General Electric Motor, with drive.
- Thermoid Belting—practically new.
- 42″ Belt—175′ centers.

FELLENZ COAL AND DOCK CO.
945 NORTH BROADWAY
Milwaukee, Wisconsin

Carl Claus has been named director of staff of The Babcock & Wilcox Co., New York, N. Y. In his new position he will coordinate the various staff functions of the company, and will supervise the activities of the following departments and personnel: patent, New York office personnel, student recruitment and training, employee training, the director of purchasing, public relations, advertising and publicity.

Mr. Claus joined B&W in 1931. After several production assignments in the Boiler Division at the Bayonne, N. J. and Barberton, Ohio works, he was made assistant superintendent at Bayonne when that plant was partially reactivated in 1937. He was transferred to the Refractories Division and appointed superintendent of the Augusta, Ga. works in 1938. In 1953 Mr. Claus was transferred to the New York office as executive assistant in charge of manufacturing and sales for the Refractories Division.

Carl Claus

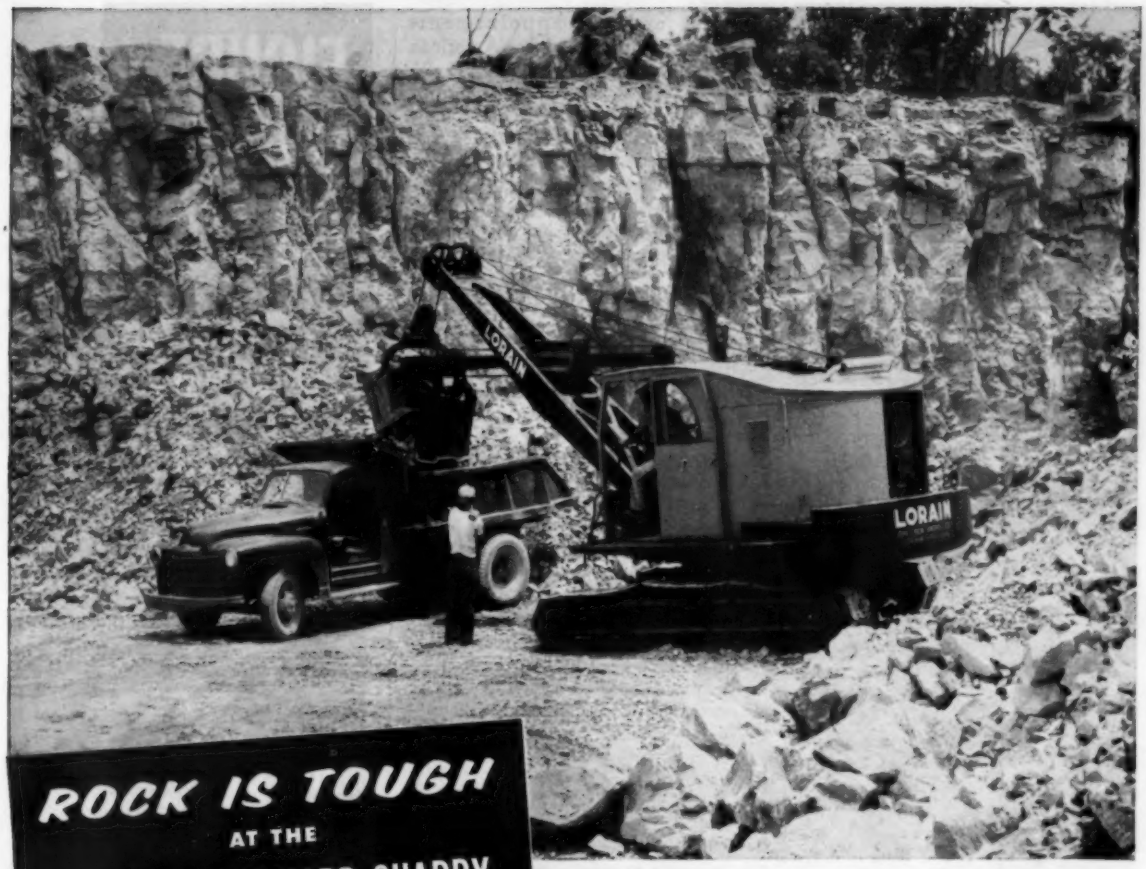
Keith M. Saville

Keith M. Saville has been named field engineer for the Calcium Chloride Institute. He formerly served as materials engineer for the District of Columbia, Dept. of Highways. Before joining the department he served with the U. S. Army, Corps of Engineers, as instructor at Ft. Belvoir, Va.

His duties with the Calcium Chloride Institute will include engineering service for users in the eastern coastal states, from northern Virginia to the New England states. He will make his headquarters in Washington, D. C.

Robert S. Lynch has been elected chairman of the board of the Continental Gin Co., Birmingham, Ala., succeeding George W. Woodruff, who was named chairman of the executive committee. Mr. Lynch, president of the Atlantic Steel Co., will continue in that capacity with the Atlanta firm.

Merrill E. Pratt will continue as president of the Continental Gin Co., which position he has held since 1934.



ROCK IS TOUGH AT THE RIGSBY & BARNARD QUARRY LORAIN-26 IS TOUGHER!

This heavy-duty ¾-yd. Lorain-26 Shovel is the 3rd Lorain that Rigsby & Barnard Quarry of Cave-in-Rock, Illinois, have counted on for dependable, low-cost digging in their quarry. It is handling tough limestone against a 12-ft. face. Partner R. G. Barnard says . . . *"The Company is well satisfied with this shovel."*

LORAIN-26 FEATURES THAT PAY OFF IN ROCK

There's a long list of new design and performance features in the "26" you should investigate . . . here are a few:

• A real, heavy-duty ¾-yd. shovel—greater weight (over 47,000 lbs.), increased power • A no-stall, non-shock Hydraulic Coupling power take-off • "E-Z" Controls for fingertip operation—providing 70% less operator effort • Hydraulic power crawler controls • Greater lifting and working capacities when used as a crane • 19 ft. shovel boom for greater digging ranges • Newly-designed, sturdier, wider 2-speed Crawlers with 29" wide treads • A sturdier, all-welded Turntable Bed.

Ask your Thew-Lorain Distributor to show how Lorains can best fit your quarry . . . from shovel sizes through 2½ cu. yds., on a wide selection of crawler or rubber-tire mountings. Take time to look at Lorains!

THE THEW SHOVEL CO., LORAIN, OHIO

THEW LORAIN®

BIN STUCK LATELY?

If you're troubled with sticking, arching, bridging or settling conditions, just install a CLEVELAND AIR OR ELECTRIC VIBRATOR to positively solve the problem. All the items necessary to complete an installation are available in kit form . . . so easy . . . and costs so little.

What's the problem in your case? Just tell us . . . or ask for our detailed literature.

Cleveland can furnish both AIR AND ELECTRIC VIBRATORS.

THE CLEVELAND VIBRATOR COMPANY

2701 Clinton Ave. • Cleveland 13, Ohio

Three executive appointments have been announced by American Brake Shoe Co., New York, N. Y. George N. Decker has been named first vice-president of the Kellogg Division. William H. Starbuck has been named vice-president of the Sintermet Division and Fred L. Cogswell succeeds Mr. Starbuck as vice-president of the Kellogg Division.

Mr. Decker, formerly vice-president and comptroller of the Kellogg Division, joined Kellogg in 1944 as assistant comptroller. He was named division comptroller in 1949 and became vice-president and comptroller in 1952. He will continue to be located at the division headquarters in Rochester.

Mr. Starbuck, formerly vice-president of the Kellogg Division, transfers as vice-president to the company's Sintermet Division. He joined the company's sales force in 1948 and served as sales engineer in the Amsco Division and later as sales representative and assistant sales manager of the Kellogg Diviion. He was appointed vice-president in 1949. In his new position he will be located at Sintermet headquarters in Cleveland.

Mr. Cogswell, who succeeds Mr. Starbuck, joined the company in 1935 as an apprentice. In 1937 he was appointed salesman for the National Bearing Division and joined the Kellogg sales force in 1946. Prior to his new appointment he was sales manager of the Kellogg Division. Mr. Cogswell will also be located at Rochester.

Appointment of Hugh L. Ross and Charles L. Babb as assistant manager and chief engineer, respectively, of the centrifugal pump department has been announced by Allis-Chalmers Manufacturing Co., Milwaukee, Wis.

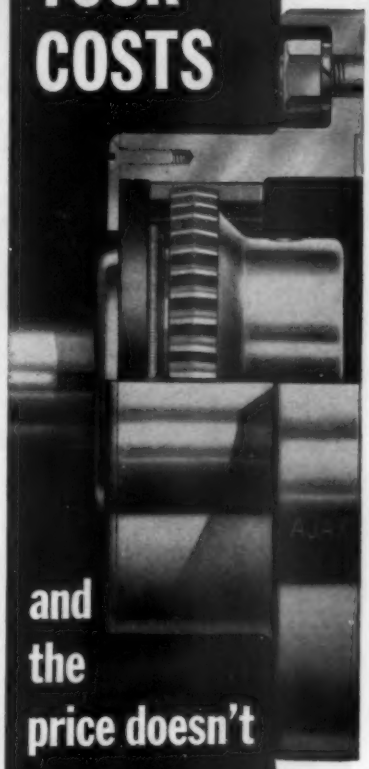
Mr. Ross had been chief engineer of the department since 1945. Prior to that he was engineer-in-charge of pump design for five years. He came to Allis-Chalmers in 1928.

Mr. Babb, who had been ingineer-in-charge of centrifugal pump design, joined Allis-Chalmers in 1924.

One of the largest awards ever made to an employee was given by SKF Industries, Inc., Philadelphia, Pa., manugacturers of ball and roller bearings, to Kenneth Siegel, 7248 Leonard St., Frankford, Pa., for a machine improvement idea.

Mr. Siegel, who started at SKF in 1940, suggested the purchase of a portable boring mill for boring the cylinders on automatic screw machines instead of farming out the work to an outside vendor.

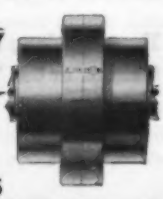
FIGURE YOUR COSTS



and the price doesn't mean a thing

• Your phone starts ringing every time you have a breakdown in your yard. Delivery is held up, production stops, men are laid off. Add up those costs and the extra price of Ajax Dihedral Couplings is insignificant. They handle misalignment heretofore considered excessive.

Write for Catalog.



AJAX FLEXIBLE COUPLINGS

AJAX FLEXIBLE COUPLING CO. INC.
WESTFIELD, N. Y.

More Strength

with Autocar . . .
Nut and Bolt Construction

- **Higher strength, heat treated material used.**
- **Bolts are made to fill holes exactly to assure snug fit.**
- **Nuts and bolts are assembled with heat-treated lock washers under both head and nut for a permanent, tight installation.**
- **Nuts and bolts are fundamental to easy, low-cost maintenance.**

. . . Means more work, longer life, lower cost on the job

HAVE you seen the Autocar "Nut and Bolt" demonstration? You have if you've seen Autocars on the job—on the tough jobs, everywhere!

Autocar Quality starts with "Nut and Bolt" construction . . . the use of nuts and bolts in the assembly of all Autocar Trucks. It's typical of the way Autocars are quality engineered to exact operator requirements . . . for more work . . . longer life.

Find out how Autocar cuts transportation costs . . . for years. See your Autocar representative without delay.

AUTOCAR TRUCKS

AUTOCAR DIVISION OF THE WHITE MOTOR COMPANY, EXTON, PA.

AUTOCAR DIVISION
The White Motor Company, Exton, Pa.

Send me facts about Autocar "Nut and Bolt" Construction

Name_____

Position_____

Firm_____

City_____ Zone____ State_____

24L

Dr. A. M. Ball, manager of Hercules Powder Co.'s Experiment Station, Explosives Research Division, has transferred to the home office where he will be assigned to special duties including a continuation of his present contacts with Defense Department agencies and with ordnance plants operated by Hercules.

Dr. Lyman G. Bonner, technical director of Allegany Ballistics Laboratory, will succeed Dr. Ball at the station as manager of the Explosives Research Division, and will serve also as manager of the High Pressure Laboratory.

Dr. C. Dana McKinney, Jr., a former Experiment Station Employe, will become technical director of Allegany Ballistics Laboratory. He has been at Allegany since April of this year assisting Dr. Bonner.

Gwilym A. Price, president of the Westinghouse Electric Corp, Pittsburgh, Pa., since January, 1946, has been elected chairman of the board and president. He continues as chief executive officer, a responsibility he has carried throughout his term as president. The board chairmanship at Westinghouse has not been occupied since 1951.

Mark W. Cresap, Jr., was named to serve as executive vice-president and deputy chief executive officer. Since April, 1951, Mr. Cresap has been vice-president and assistant to the president. He also was elected to the company's board of directors and to the executive committee.

Latham E. Osborne, whose 45-year career at Westinghouse has covered all the distance between a tool clerk's job and the executive vice-presidency, was elected vice-chairman of the board. Mr. Osborne has been a board member since 1953.

John K. Hodnette, formerly vice-president in charge of the company's apparatus products divisions, was elected vice-president-general manager responsible for supervision of the operations of all of the company's product groups Mr Hodnette also was elected to the board of directors.

The position left vacant by Mr. Hodnette's promotion, directing manufacture and distribution of basic electrical equipment for utility and industrial applications, was filled by the appointment of A. C. Monteith, since 1948 the company's vice-president in charge of engineering and research.

Establishment of ESCO International, a new division created to handle its export business, has been announced by Electric Steel Foundry Co., Portland, Ore.

Main office of ESCO International is located in New York City under the direction of Ed T. Hewitt. Branch offices of ESCO International are located in Portland, Ore., and San Francisco, Calif. Foreign representatives and dealers are located in principal cities throughout the world.

The St. Louis Heil Equipment Co., 2002 Woodson Rd., Overland, Mo., has recently been appointed the Heil distributor for east-central Missouri and the Illinois counties of Greene, Jersey, Macoupin, Madison, St. Clair, and Monroe.

Gifford V. Leece, president of Gardner-Denver Co., Quincy, Ill., has been elected chairman of the executive committee to succeed Ralph G. Gardner, who recently retired as treasurer and head of the executive committee. Mr. Gardner continues as chairman of the company's board of directors and as a member of the executive committee.

Mr. Leece, who first joined Gardner-Denver in 1922, has been active in various phases of the company's operations both here and abroad. In 1944, he organized the company's export division and during World War II, he served on the Pump & Compressor Divisions of the War Production Board. He was elected president of Gardner-Denver in 1954 to succeed the late E. F. Schaefer.

Alexander G. Lindquist, vice-president and formerly secretary and comptroller, has been named treasurer and a member of the executive committee.

Ready and Waiting!!

Your Copy of the NEW

Lightweight Aggregate Plant Map

Our new Lightweight Aggregate Plant Map of the United States is so new the ink is hardly dry on it yet. But we feel that we are justified in rushing the distribution of this map because so many people are interested in the names and locations of the various lightweight aggregate plants, and the type of product they produce.

This clearly illustrated map and list of plants by states can be posted on bulletin boards, walls, or under the glass on top of your desk, for ready-reference. Here is a map you will use over and over again because it contains information you want. It is printed in black and white on durable paper; 22½" x 17½" in size; convenient to fold or carry.

WRITE FOR YOUR COPY TODAY

Send request on your business letterhead. Our supply is limited, so place your order now. Distribution will be on a first come, first served basis. Write to:

PIT AND QUARRY PUBLICATIONS

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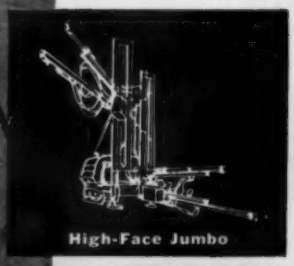

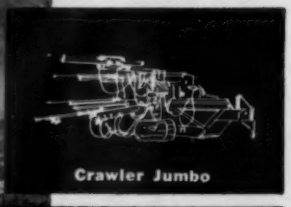

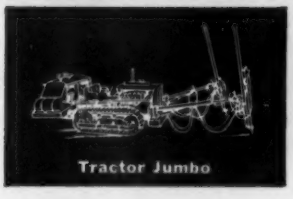

no matter HOW BIG or how small the drilling job

you can do it faster and easier with an I-R HYDRA-BOOM JUMBO

THE giant, octopus-like drill jumbo above was supplied by Ingersoll-Rand for a large shaft-sinking job. Carrying six heavy, boom-mounted I-R drills, each with individual, fingertip control, it is lowered down the shaft as drilling progresses — virtually eliminating setup time and giving maximum footage per shift.

Other typical Hydra-Boom jumbos, manufactured by Ingersoll-Rand Co. are shown above right and illustrate the *unlimited flexibility* of these fast-acting, hydraulically-operated drill mountings. Use them on large jobs or small — for smooth, effortless hole spotting. Let us help you engineer your unusual drilling problems. For the complete, cost-saving story, write today for Bulletin No. 4162.

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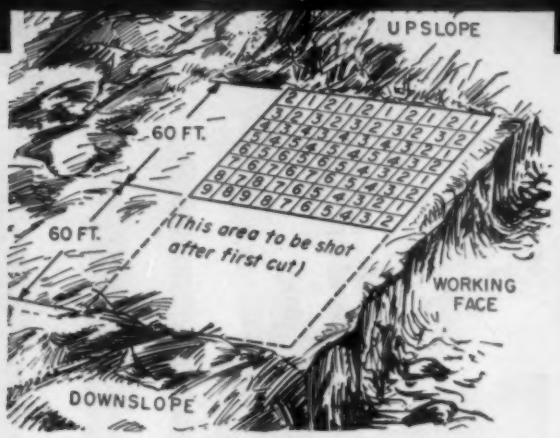
DRIFTERS • JACKHAMERS • DRILLMASTERS • QUARRYMASTERS • CARSET BITS • AIR TOOLS

How to have good breakage— and good public relations, too

This is the town—Suffern, N. Y. This is the blast site—only 100 feet from the nearest houses . . . 75 feet above them. Mission: blast a Thruway. But hold down noise and vibration . . . control throw.

Blast quiet . . . nearly "invisible." Shot with a ROCKMASTER® millisecond delay pattern. Entire mass of rock lifted only several feet.

Blast at its height. No dangerous, wild flying boulders. Entire burden directed uphill. Residents have no complaints about this blast.



So CLOSE does the New York State Thruway skirt Suffern in some places, you can look down onto the roofs! Don't think this didn't call for some tightly controlled shooting by L. G. DeFelice & Son, contractors!

In this 112-hole side-hill shot using 1100 lbs. of explosives, a ROCKMASTER® millisecond delay pattern was the perfect solution. Extreme confinement meant little noise and vibration. Close control of throw directed the movement of the burden *uphill*. With such careful timing, spacing, loading, and stemming . . . few Suffern townspeople even realized a blast had been set off!

You can get results like this, too. Ask your Atlas representative about the modern ROCKMASTER method of millisecond delay blasting. ROCKMASTER gives you high efficiency, excellent control and breakage . . . plus a "good neighbor policy" as a bonus.

GET "BETTER BLASTING"

If you are not already getting this informative periodical, let us put your name on our mailing list today.

(P. S.—Tell us who else in your organization should get "Better Blasting", too.)

ATLAS

ATLAS EXPLOSIVES

"Everything for Blasting"

ATLAS POWDER COMPANY, WILMINGTON 99, DELAWARE

Offices in principal cities

DEMPSTER DIGGSTER® GRD-101

....only front end loader or small shovel of its type with bottom dumping bucket!

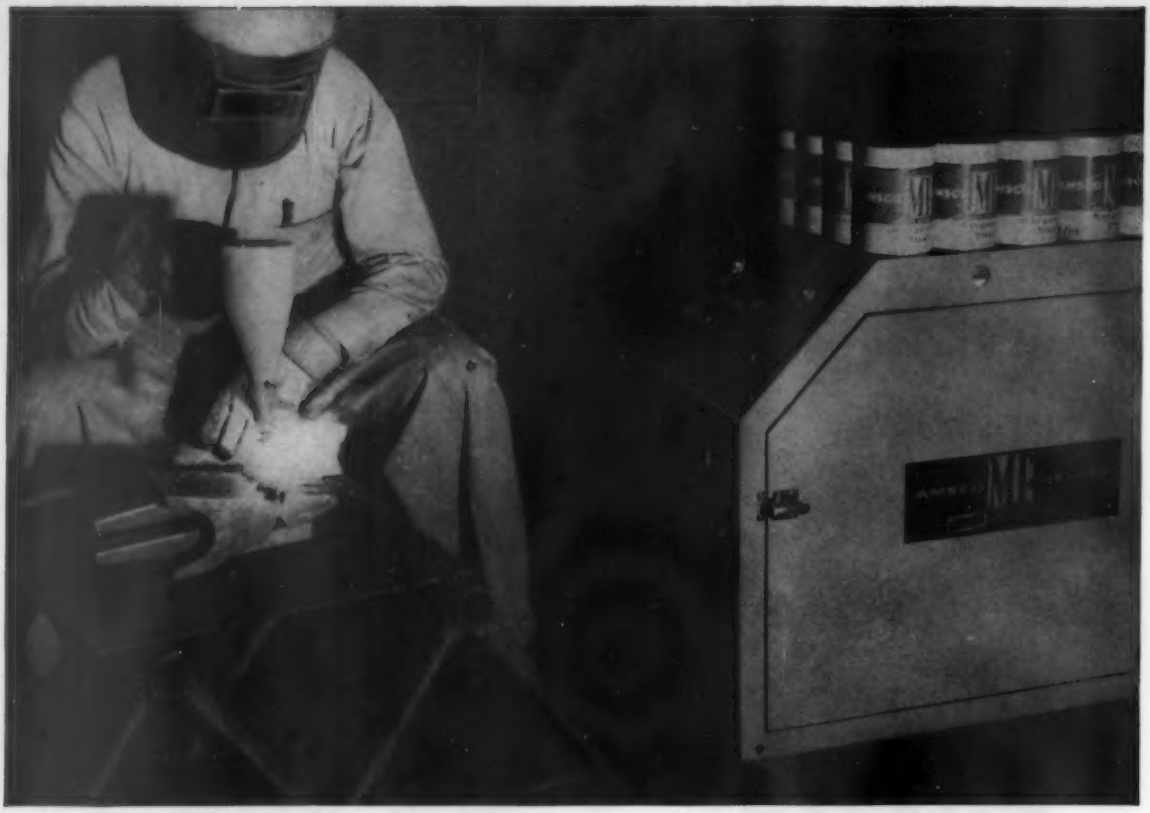
HERE IS A SMALL SHOVEL and front end loader that is fully operated by hydraulic power with independent crowd and hoist action—an excavator and loader that needs no wheel traction. It is the only shovel of its type featuring bottom dumping bucket—emptied completely and instantly!

Hydraulic crowd and hoist moves bucket out-and-up to follow contour of material—getting a full load with every stroke. This reduces both loading time and idle truck time to a minimum. Thus, gets the job done faster!

The Dempster-Diggster is the only small shovel that offers you all the important features of big shovels . . . Simultaneous and Independent Crowd and Hoist . . . Hydraulic Crowding . . . Hydraulic Hoisting . . . Variable Crowd Action at any Dipper Position in addition to Changeable Bottom Dumping Buckets for digging or loading. Write for complete facts on this revolutionary, power-packed hydraulic shovel. A product of Dempster Brothers, Inc.

Above Dempster-Diggster GRD-101 is equipped with 1½ cu. yd. loading bucket for materials-handling. Photo below shows Dempster-Diggster GRD-101 excavating with 1 cu. yd. bucket with four teeth.

DEMPSTER BROTHERS, 2115 N. KNOX, KNOXVILLE 17, TENNESSEE



Welder is shown welding a "wear-sharp" repointer to the shank of a dipper tooth using the Amsco MF and flux.

HARDFACE WITH THE AMSCO® MF

for manual flexibility . . . plus machine speed and accuracy

The Amsco MF combines the visibility and craftsmanship of hand welding with the automatic advantages of machine work. Speed of hardfacing increases because the Amsco MF uses small-diameter electrode and high-current densities which allow the operator to maintain a high deposit rate. The electrode feed is continuous—and automatically regulated—to maintain a constant arc. Thus, the machine automatically *compensates* for operator movement or an irregular welding surface.

Cost of deposited metal is less! The Amsco MF uses coiled, bare mild steel electrode. It feeds through the flux hopper (the cone). There it is magnetically coated with your choice of manganese steel build-up or hardfacing alloy which is carried in the flux. You coat your electrode as you weld at considerable savings in deposit cost.

The machine is portable. It plugs into any standard welding unit, and requires no special setup. See a demonstration of the Amsco MF's speed, quality of weld and uniform deposit. Try it yourself and discover how easy it is to operate. Your Amsco Distributor is ready to show it to you now. Welding products are distributed in Canada by Canadian Liquid Air Co., Ltd.

make your Amsco Distributor HARDFACING HEADQUARTERS

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Ill.

Harms Brothers, Sacramento, California, reports—

"Our high-output Austin-Western 111 crushing plant produces big tonnage at low cost"

This big, high-speed Austin-Western 111 crushing and screening plant is turning out 1" and ¼" aggregate for Harms Brothers, Sacramento, California, contractors.

They report: "Individual electric motors drive all conveyors and screens on our 111 plant for smooth, high-speed operation. The 10" x 36" jaw crusher, 40" x 24" roll crusher and 4' x 14', 2½ deck screen give us really big capacity. And the construction extras built into this rugged plant keep downtime at a minimum. It all adds up to high output at low cost for more profitable operation."

Harms Brothers' experience is typical of users across the country who have found that Austin-Western wins "hands down" when compared feature-by-feature with other crushing and screening plants. Study the chart at right to see just a few of the reasons why it will pay *you* to compare before you buy. To get complete, detailed information, see your nearby Austin-Western distributor today . . . or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

Why it will pay you to COMPARE before you buy:

COMPARE	A-W	MAKE "X"	MAKE "Y"	MAKE "Z"
1. Steel plate frame for high strength without weight of cast steel frame.	YES	NO	YES	NO
2. Machined steel toggle plate for absolute protection instead of cast iron.	YES	NO	NO	NO
3. Inclined positive-throw type vibrating screen.	YES	YES	NO	YES
4. All moving screen parts operate in rubber bushings that need no lubrication.	YES	NO	NO	NO
5. Over-size self-aligning spherical bearings in crusher.	YES	YES	YES	YES
6. Heat treated chrome vanadium steel shaft in crusher.	YES	NO	NO	NO
7. Individual electric drive motors for all screens and conveyors (optional).	YES	NO	NO	NO
TOTAL	100%	28½%	28½%	28½%

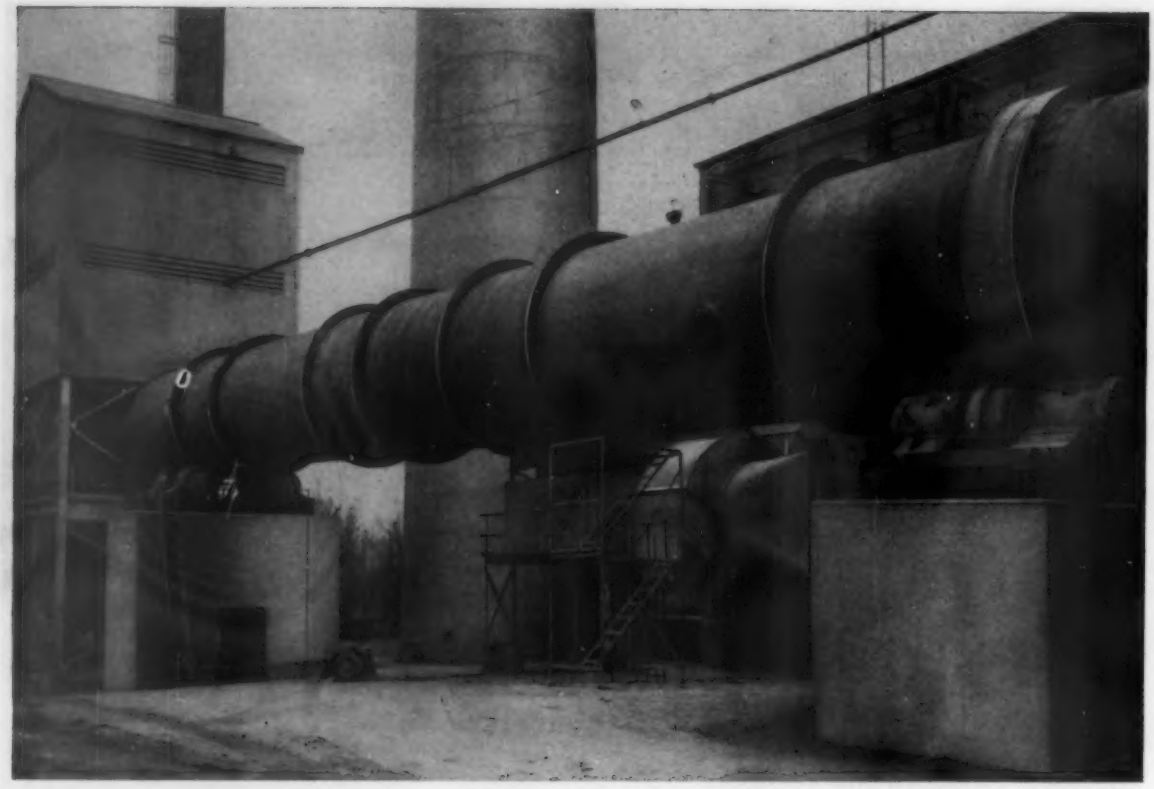
Distributors in Principal Cities of the World

AUSTIN-WESTERN

CRUSHING, SCREENING & WASHING EQUIPMENT

BALDWIN-LIMA-HAMILTON

Construction Equipment Division · LIMA · OHIO · U. S. A.



Over 55,000 feet of Rotary Kiln Installations are a proving ground that benefits future Traylor Customers

Traylor has averaged almost 1 Rotary Kiln installation a month for the past 14 years. They are being used to process over 20 different products.

A great number of these Traylor Kilns are operating in the limestone and cement producing industries. From this concentration of effort, Traylor has naturally become thoroughly familiar with the many thermo-processing problems connected with limestone and cement production.

Drawing on this experience, Traylor has developed many advanced Rotary Kiln design features contributing to low cost, trouble free calcining of lime and cement. By now, all these features have been thoroughly proved on the proving ground represented by Traylor's 55,000 feet of Kiln installations.

Every Traylor Kiln is individually "Traylored" for its special jobs. Sizes have been built ranging from the smallest up to 12′ in diameter by 450′ in length.

Bulletin #1115 will tell you all about the profit-producing advantages of a "Traylor-Made" Kiln. Send for your copy today.

TRAYLOR ENGINEERING & MFG., CO.
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SALES OFFICES: New York • Chicago • San Francisco
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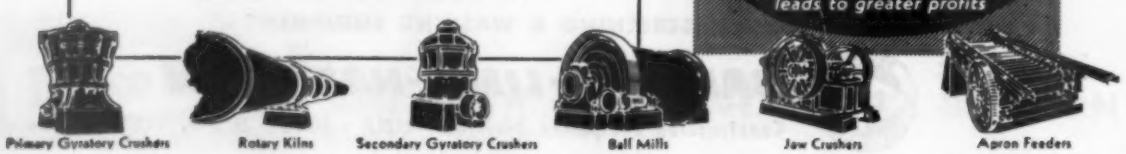
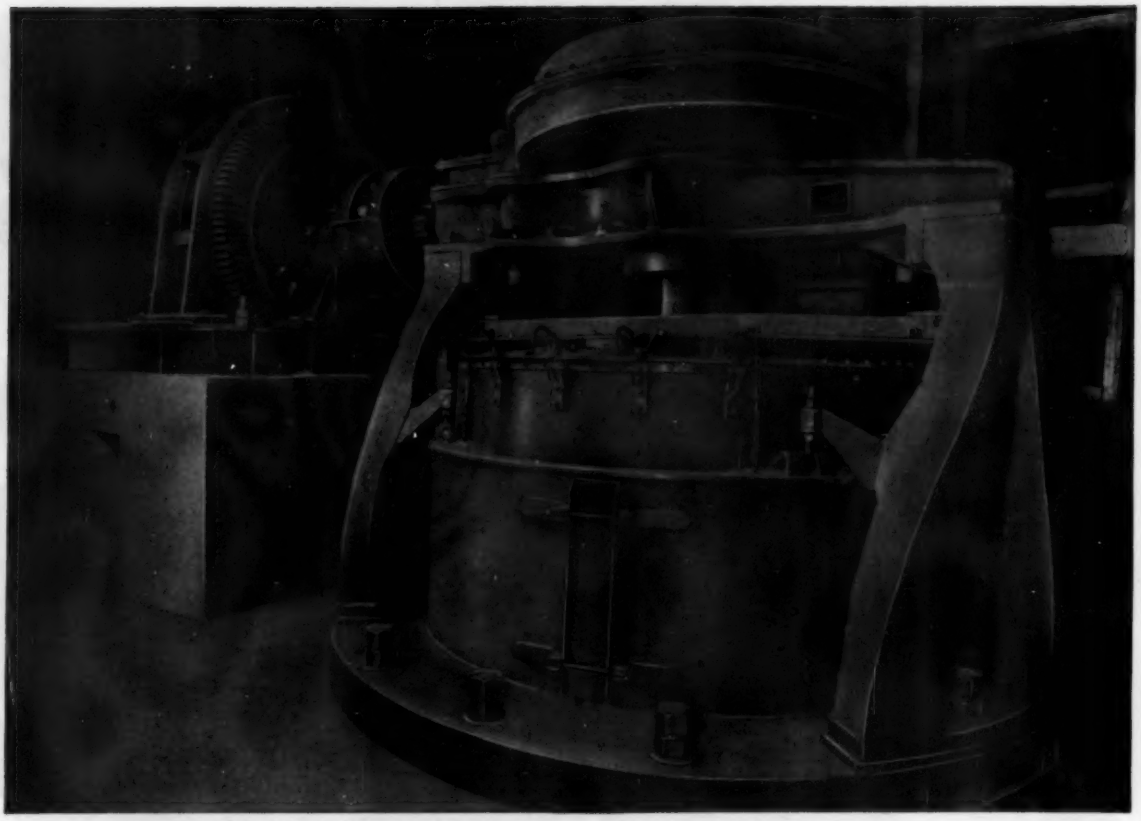
A Traylor leads to greater profits





Bradley Hercules mill. Produced by Bradley Pulverizer Co., Allentown, Pa., it incorporates some 54 years' experience in the design and manufacture of pulverizing machinery. More than 500 installations in the Portland cement and allied industries, in the Western Hemisphere alone, attest to their high output. Bradley supplies Hercules mills for reducing cement clinker, raw cement mix, gypsum, limestone and similar materials.

Bradley Hercules mills utilize Ni-Hard ...outlasts chilled iron 3 to 5 times

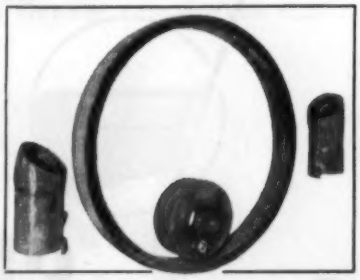
Subject NI-HARD® ROLLS to your severest test . . . by grinding cement clinker with them.

It's a test that shows why Bradley Pulverizer Company, after 54 years of experience in this field, declares Ni-Hard cast iron "... by far the best roll for grinding cement clinker of all kinds . . . will give three to five times the life of chilled iron rolls formerly used."

In addition, Bradley engineers state that excellent low-cost Ni-Hard die rings, due to their remarkably long life, prove "far superior to plain steel when used for clinker grinding."

Because of the long proven wear-resistance offered by Ni-Hard, feed spouts for Bradley Hercules mills are also made of this outstanding nickel-chromium white cast iron.

Ni-Hard licks abrasion . . . keeps right on handling abrasives where less rugged metals fail. So use Ni-Hard cast iron where you find abrasion most severe. You'll not only save replacement parts and labor, but also cut equipment downtime and keep output high.



Ni-Hard Roll Head, Die Ring and feed spouts for Bradley Hercules mill. Ni-Hard roll heads give an average service life of 3000 hours. Operational life of Ni-Hard die rings is an average of 2,500 hours.

INCO THE INTERNATIONAL NICKEL COMPANY, INC. 67 Wall Street New York 5, N.Y.

Withstands far greater

SHOCK LOADS

than any standard V-belt

Here are the interesting reasons why Gates Super Vulco Ropes stand up months, even years longer than *any* standard V-belts...

1. *Super-Strength Cords* provide 40% greater horsepower capacity . . . easily absorb heavy shock loads. **2.** *Flex-Weave Cover* (U.S. Pat. No. 2519590) provides greater flexibility with far less stress on the fabric. Cover wears longer — increases belt life, lowers belt costs.

3. *Concave Sidewalls* (U.S. Pat. No. 1813698) provides sure pulling power, longer wear because sides straighten out as belt bends—make even contact with sheave walls.

SHOCK LOAD of this big jaw crusher at Canadian Quarries, Ltd. is absorbed by Gates Super Vulco Rope Drive. Wherever shock load is severe, Gates Super Vulco Ropes cushion the shock—keep machinery replacement cost down.

4 other outstanding advantages

Resists Oil, Heat and Weather: Long life is assured even in the presence of excessive oil . . . even under prolonged exposure to heat and weather.

Provides Static Safety: The high electrical conductivity of Gates Super Vulco Ropes provide safer drives in explosive atmosphere.

Has Little Stretch When Wet: Low moisture absorption eliminates need for special take-up in wet locations.

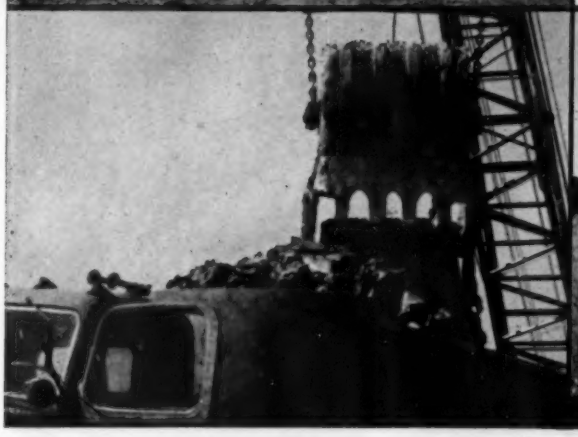
Saves Space: Higher horsepower rating and greater resiliency may permit fewer belts, or smaller sheaves where space saving is vitally important.

Gates SUPER Vulco Rope

The V-Belt with 40% more horsepower capacity

LOADING TRUCKS?

Here's How To Load 'em Quicker—



USE A *PAGE AUTOMATIC BUCKET*

It's Guaranteed to Load Faster

Draglines equipped with Page Automatic Buckets will load your trucks faster—in fact, *will load 11 trucks in the time usually required to load 10.* A Page Automatic, in effect, adds another truck to your fleet or makes a 1¼ yd. machine out of a 1 yd. unit.

HERE'S WHY:

1. Page Automatic Buckets *automatically* rock onto the teeth and dig in at first pull of the load line, filling completely within 1½ to 2 bucket lengths.

2. Page Automatic Buckets *have more capacity per rated yard* and will *carry out more material* on each cycle.

3. Page Automatic Buckets dump fast and clean . . . no juggling to position the bucket . . . no excess spillage.

B-3100

Let us give you a free demonstration without obligation. We will put a Page Automatic on your machine where *YOU* can make comparative time and efficiency studies. Write for GPB454 Bucket Catalog.

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Automatic Dragline Buckets
Walking Draglines

If it's a Page... It DIGS

Ready to Roll for a Longer Grind

SHEFFIELD

ARMCO

MOLY-COP

TRADE MARK

COPPER • MOLYBDENUM • ALLOY
GRINDING BALLS

This carload of Moly-Cop Grinding Balls might be headed to any one of hundreds of destinations around the world. Sheffield ships them everywhere grinding is part of the industrial picture.

Wherever they go, they'll do a better grinding job. Fewer chargings will be required. Less down time. Less frequent freight bills. Money saved.

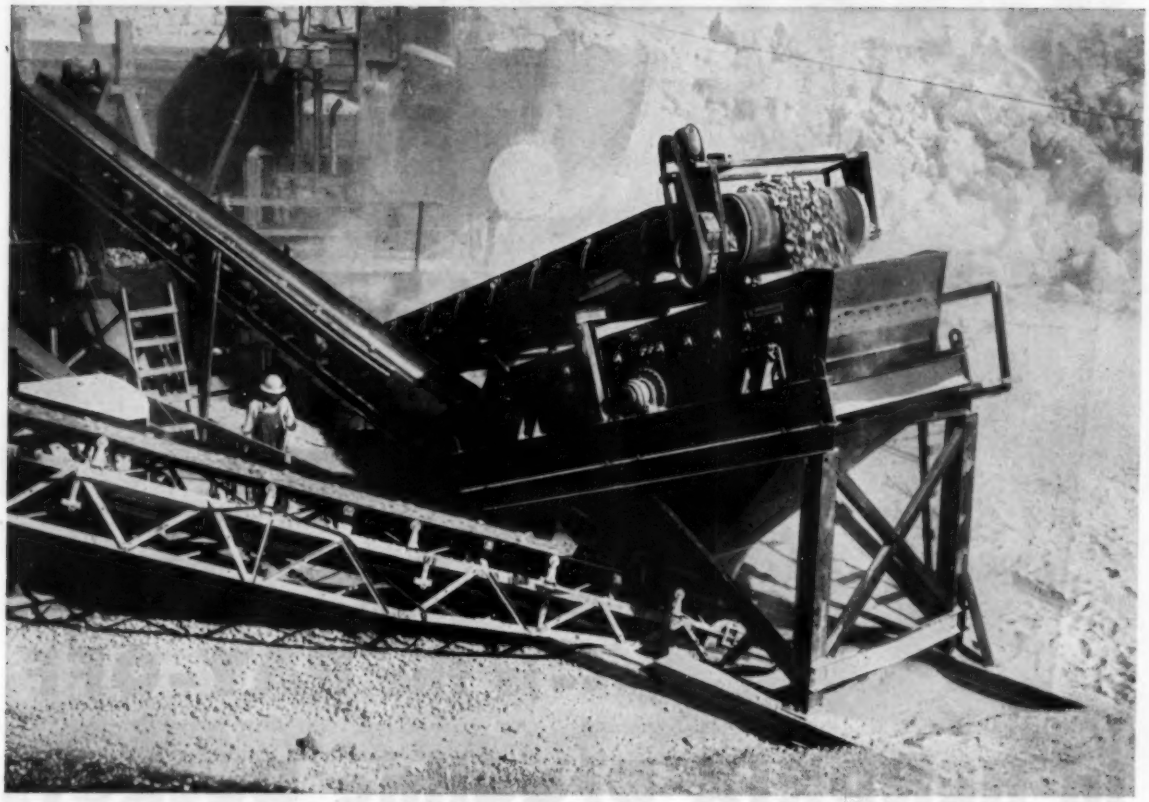
That's because Moly-Cop Grinding Balls keep their spherical shape longer. Sheffield's special alloy of steel, copper and molybdenum is just the right "recipe" for longest resistance to wear, chipping and abrasion. There's a big difference in grinding balls—and it will show up on your profit sheet when you use Moly-Cop Grinding Balls.

We're ready with the best grinding ball—plus engineering counsel on how it can best save money in your operation. A call will get you all the facts.

SHEFFIELD STEEL
DIVISION
ARMCO STEEL CORPORATION
SHEFFIELD PLANTS: HOUSTON KANSAS CITY TULSA

EXPORT REPRESENTATIVES: ARMCO INTERNATIONAL CORPORATION • Middletown, Ohio

SIMPLICITY 5′ x 12′ SCREEN
SPEEDS CONTRACT COMPLETION FOR FREEWAY CONTRACTOR



Simplicity Model D 5′ x 12′ two-deck screen receiving volcanic rock from crusher.

BALDWIN CONTRACTING CO., INC., Marysville, California, utilizes this Simplicity Model "D" 5′ x 12′ two-deck Screen for sizing 2" material for highway base. Since April 14th 75,000 tons of tough, volcanic material have been handled by this Simplicity Screen. Operators all over the country are counting on Simplicity Screens where large-scale production of low-cost material is required. Simplicity units will increase production and will insure fast, accurate sizing in your Plant. The Simplicity simplified balanced assembly helps keep maintenance costs down. For complete information, consult a Simplicity sales engineer or write us today.

For further information on Os-A-Veyor Feeders, Conveyors, Gyrating Screens and Woven Wire Screen Cloth, write . . .

167

SALES REPRESENTATIVES IN ALL PARTS OF THE U.S.A.

FOR CANADA: SIMPLICITY MATERIALS HANDLING LIMITED, GUELPH, ONTARIO

FOR EXPORT: BROWN AND SITES, 50 CHURCH ST., NEW YORK 7, N. Y.

Simplicity
TRADE MARK REGISTERED

ENGINEERING COMPANY • DURAND 12, MICH.

Performance

---is the PAY-OFF in HENDRIX Dragline Buckets

A TYPE FOR EVERY DIGGING PURPOSE

¼ to 40 Cubic Yards

Hendrix Lightweight Dragline Buckets

EXTRA PAYLOADS are the pay-off for the performance of Hendrix Dragline Buckets. Check with Hendrix users about actual job performance . . . yardage moved per day . . . maintenance and operating costs. Hendrix buckets are real money-makers because they *fill faster* . . . get a *full payload every trip* . . . and *dump cleaner* . . . all adding up to more payloads per hour . . . job after job!

All Hendrix Buckets available without perforations

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

NEW SUPER RAYNILE CONVEYOR BELT 400% STRONGER

Provides the economical answer to transporting crushed stone and other bulk materials over long distances and up steep slopes.

This remarkable new Hewitt-Robins conveyor belt reinforced with the revolutionary synthetic fabric, Super Raynile, makes possible an entirely new concept in single-section conveyor application. It solves difficult materials handling problems where topography and other conditions require the use of a long single-length conveyor.

Already in service, Super Raynile has the highest operating tension of any conventional carcass belt. Because of its tremendous tensile strength, 400% greater than conventional cotton reinforced belts, a single conveyor section *5¾ miles long* can be built over level terrain to carry material at 400 TPH using only a 6-ply Super Raynile belt 30 inches wide. This same belt can also lift material from ground level to a height of 830 feet.

The new Hewitt-Robins Super Raynile conveyor belt is highly flexible and pliable despite its great strength. Its cost is less than steel-reinforced belts and Super Raynile can easily be spliced in the field more quickly, more economically and without the specialized equipment required to splice steel-reinforced belts.

Super Raynile belt is available in a wide range of specifications . . . widths up to 72" — thickness up to 15 plies.

Learn more about this new long-length, long-life conveyor belt. Contact your local Hewitt-Robins Industrial Supply Distributor (see Classified Phone Book), or write direct to "Super Raynile Belt", Hewitt-Robins Incorporated, Stamford, Connecticut.

Hewitt-Robins

Conveyor Belting—Industrial Hose—Conveyor Machinery—Vibrating Screens—Vibrating Conveyors—Design, Manufacture, Engineering and Erection of Complete Bulk Materials Handling Systems.

HEWITT-ROBINS INCORPORATED • STAMFORD, CONNECTICUT

There's A *SYNTRON* SCREEN

. . . for better results on every industrial application

Combining the latest screening techniques with advanced vibratory design, Syntron has perfected a complete line of screens for big tonnage efficiency on any type of screening operation. It will pay you to make Syntron the headquarters for your screening equipment.

GRIZZLY BAR SCREENS

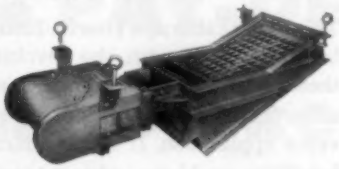
Bar-type, electromagnetic Grizzlies for heavy tonnage scalping or coarse sizing and feeding in one operation. Controllable speed vibration—no mechanical wearing parts. Vibra-flow principle prevents clogging of tapered, wear resistant grizzly bars. Models for any size operation.

Double-Deck VIBRATING SCREENS

Compulsory driven, swinging mass, dual-deck screens for separating heavy loads of ores, coarse aggregate, shake - out sand, etc. Provide increased screening surface in the same floor space.

VIBRA-FLOW SCREENING FEEDERS

Compact heavy duty Screening Feeders for continuous operation on dewatering, desludging and desilting operations. Bar or wire type screening surfaces—controllable, electromagnetic power.

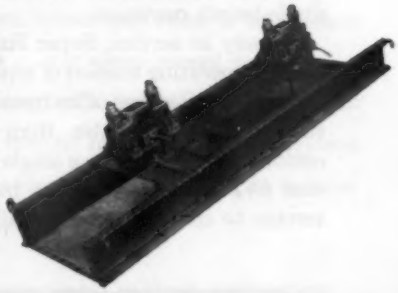


Syntron-Sinex VIBRATING SCREEN

Driven by a pressure tight, waterproof eccentric vibrator these screens provide high speed, uniform sizing and dewatering. Single or double deck, suspension type models with replaceable screening surfaces.

PULSATING MAGNET VIBRATING SCREENS

Pulsating, high speed screens that assure positive, variable speed vibration of the entire screening surface. For durable scalping and rough sizing operations with low cost installation.



Write for complete catalogue data — *Free*

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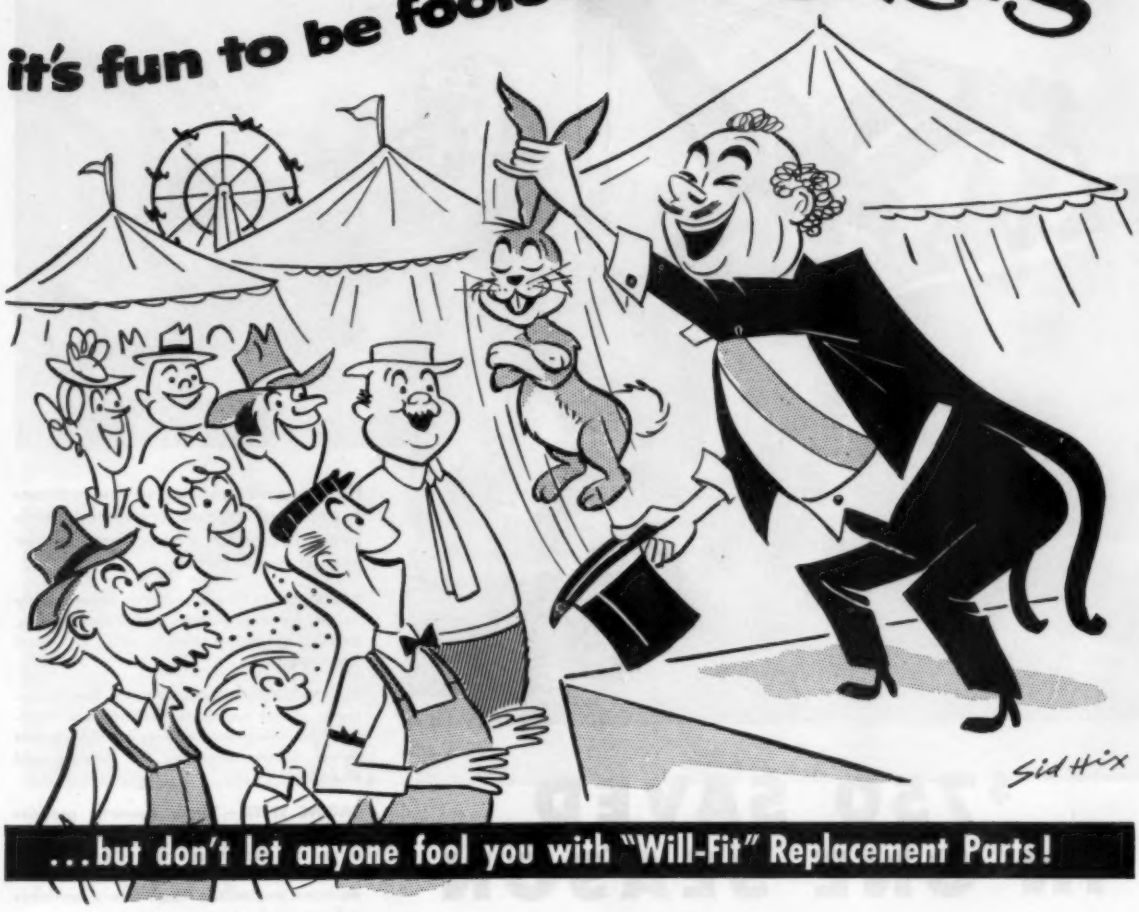
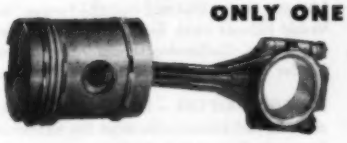
385 Carson Avenue — Homer City, Penna.

it's fun to be fooled at a CIRCUS

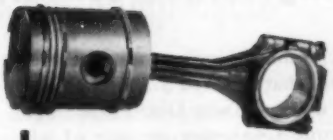


...but don't let anyone fool you with "Will-Fit" Replacement Parts!

ONLY ONE OF THESE IS GENUINE...



ONLY ONE IS GUARANTEED TO DELIVER SERVICE!



There's no such thing as "or equal" replacement parts for Buda engines. *Only Buda* can produce and supply the *exact* replacement parts designed to keep Buda engines operating at maximum efficiency and profit to you.

Whether it's a piston . . . a set of rings . . . a gasket, gear or filter—whatever part you need—play it safe and sure by insisting on genuine factory engineered Buda replacement parts *every time*. It pays dividends in the long run.

BUDA DIVISION • HARVEY, ILLINOIS

Your nearby Buda Division Engine Distributor carries a large stock of genuine Buda replacement parts. Call on him for your requirements.

A-C ALLIS CHALMERS

ALLIS-CHALMERS

BC-34

$750 SAVED IN ONE SEASON

using Torque converter on power shovel

A prominent contractor recently reported that he saved $750 in one season using a Twin Disc *Three-Stage* Torque Converter on one of his power shovels.

This total was comprised of savings on three different phases of the shovel's application. (1) Cable—on two shovels with direct drive, cables were replaced *seven times* on one and *eight times* on the other. With torque converter drive, however, the cable was replaced *only three times*. Resultant saving: $350. (2) Maintenance costs — a saving of 12½ cents per hour, or a season total of $250 on the shovel with the Twin Disc Converter. (3) Fuel consumption — the torque converter unit used ½ gallon less fuel per hour, saving $140 in the 2,000 hour season.

You can realize a *similar* saving from *your* power shovels. *Specify* Twin Disc Torque Converters for your new units or *install* them in your existing equipment. For full details see your equipment or engine distributor. Write for bulletin 135-D.

All facts in the above story are contained in an actual case history. We have not identified the operation because publishing the owner's name would reveal confidential information.

Here are *five* money saving advantages that torque converter drive provides *your* particular power shovel application.

CABLE PULL — Torque converter automatically adjusts for wide variations in dipper loading, substituting greater digging effort for speed when required.

ENGINE OUTPUT HORSEPOWER — Torque converter allows engine to produce near maximum hp when load requires it. High engine power **always** available for hoisting and crowding.

ENGINE SPEED — Torque converter provides high engine speed throughout its working range, and higher hp output is available for heavy digging and hoisting loads. Converter equipped engine can't lug. Heavy overloads will not kill the engine.

LOWER MAINTENANCE COST—Torque converter reduces peak loads throughout shovel drive train. Cushioning shocks increases wear life for most parts subject to fatigue failure.

LONGER CABLE LIFE — In proved installations, even frayed cables with short life expectancy have been known to last a year or more where a torque converter has provided smooth, sustained output power.

TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES

TWIN DISC
Torque Converters

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

BRANCHES OR SALES ENGINEERING OFFICES: CLEVELAND • DALLAS • DETROIT • LOS ANGELES • NEWARK • NEW ORLEANS • TULSA

FAST!

that's the word for Bucyrus-Erie dig-swing-dump cycle

High-speed performance in Bucyrus-Erie excavators doesn't depend entirely on super-skilled operators or ideal digging conditions. It's the result, too, of engineering that offers features like these: anti-friction bearings to smooth the path of power . . . fast-acting controls that are pinpoint accurate and easy to operate . . . big, generously-designed clutches and brakes that deliver instant response with an extra margin of safety . . . strong, lightweight front end that puts power to work swinging payload, not deadweight . . . wide, ground-hugging treads with large bearing area for the kind of stability that makes rapid operation possible.

With all their speed of operation, Bucyrus-Erie excavators still deliver long life and low maintenance. Mining and quarry men have learned to depend on Bucyrus-Erie machines—from ⅜ to 4-yd.—for efficient, low-cost production. See your nearby distributor soon for complete details. 122E55

BUCYRUS ERIE
South Milwaukee Wisconsin

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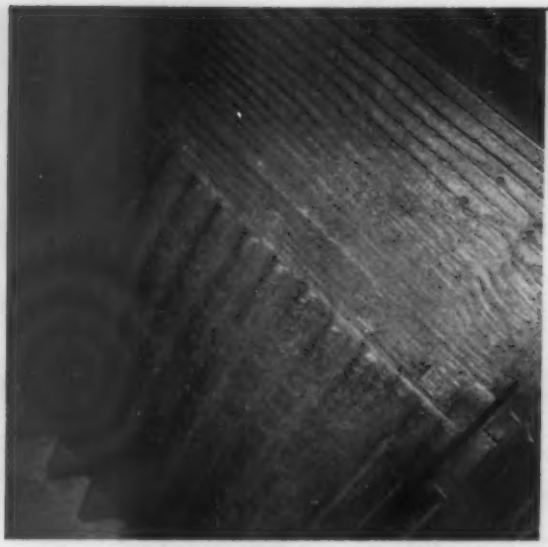
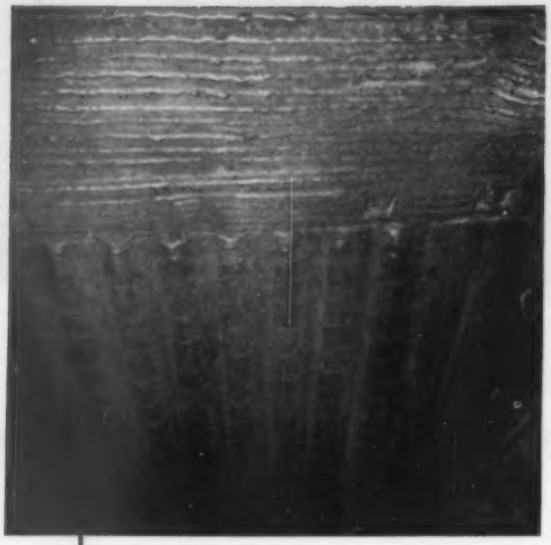
YEARS OF SERVICE
to Men Who
Shape the Earth





how to E-X-T-E-N-D working life of jaw crushers

apply VICTOR HARDFACING

No Disassembly This jaw crusher was hardfaced with jaws bolted in place, using 3/16" coated Tube Victorite. Despite cramped working area only 12" deep and 36" wide, high deposition rate and low spatter loss enabled welder to get uniform, non-sagging, long-wearing bead without distorting jaw.

Downtime Saver Because it goes on fast, without flux interference, and sets up quickly, coated Tube Victorite is wonderful for hardfacing on the job without disassembly of equipment.

Where To Use Coated Tube Victorite is a high alloy content rod with Rockwell C hardness of 55-58. It was developed specifically for tools subject to severe abrasion and impact, such as:

- Ripper Teeth
- Pug Mill Augers
- Jaw Crushers
- Roll Crushers
- Die Rings
- Tool Joints
- Scraper Blades
- Asphalt Mixer Paddle Shanks
- Mill Hammers
- Bucket Lips

It welds easily to carbon alloy and manganese steels—the latter frequently is used for buildup before applying coated Tube Victorite. It can be used for position welding. Deposit is smooth, even, free of pin holes. Made for AC and DC (reverse polarity) application.

Free Help—Victor hardfacing manual shows you the right rod to use and how to apply it. Ask your Victor dealer for manual and descriptive leaflets on Tube Victorite and other Victor rods . . . or write us.

Profitable dealerships open; inquire now!

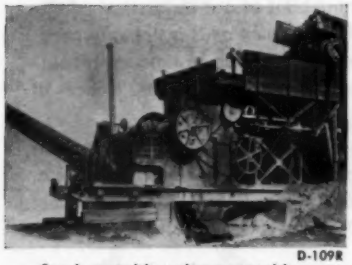
VICTOR for hardfacing

VICTOR EQUIPMENT COMPANY
ALLOY ROD & METAL DIVISION
Los Angeles 59, California • Wakita, Oklahoma

28

D-439

How to get greater production at less cost in quarry operation



D-109R

Semi-portable primary crushing plant includes apron feeder, lattice frame under-crusher conveyor, and 24 x 36 jaw crusher using a double row of Timken bearings for both main and pitman bearing assemblies.

D-443

Diamond portable crushing and screening plant receiving material from primary plant.

First, define the conditions under which quarry equipment will be working: (a) what types of stone are present; (b) what sizes of finished material are to be produced, (c) what average daily or hourly capacity is required, (d) is washing to be part of the operation, and (e) what is the largest rock to be crushed.

Then match the abilities of proposed quarry equipment with each condition. For example, the Diamond primary plant shown above is designed for crushing extra large rock for feeding to crushing and feeding operations that follow. A smaller plant on this job, though lower in original cost, would be uneconomical in the long run.

Sounds easy . . . but there's a trick: how to find the *combination* of quarry equipment that will produce the most, cost the least. A Diamond engineer will gladly survey your site to help you determine how material can be best handled to produce the sizes and quantities required. He'll suggest a complete layout plan with sketches and specifications for necessary equipment. You incur no obligation for this service.

And . . . the Diamond equipment he'll recommend for your *balanced* quarry operation is the best available. New production records are being set daily by Diamond-equipped quarry plants. Write today for Quarry Catalogs D-105 and D-106 describing the Diamond line.

DIAMOND IRON WORKS

DIVISION

GOODMAN MANUFACTURING COMPANY

HALSTED STREET AND 48th PLACE • CHICAGO 1, ILLINOIS

BIENNIAL SHOW

NSGA
NATIONAL SAND AND GRAVEL ASSOCIATION
40th ANNUAL CONVENTION

NATIONAL READY MIXED
NRMCA
CONCRETE ASSOCIATION
26th ANNUAL CONVENTION

To give you the Show you mustn't miss, we are moving to Chicago Coliseum

February 13-16, 1956

Filling the 3 halls of the Chicago Coliseum, (73,000 sq. ft. of floor space with almost unlimited head room and load capacity), you will see the most complete exhibit of our industries' equipment ever assembled, *shown as it is actually used.* It is your opportunity to get up-to-date on revolutionary developments that are taking place in machinery and techniques.

SHOW ADMISSION IS FREE to both producers and users of sand, gravel and ready mixed concrete. Mark your calendar now—*February 13-16. Place: Chicago. Event: The show you mustn't miss.*

NATIONAL SAND AND GRAVEL ASSOCIATION
NATIONAL READY MIXED CONCRETE ASSOCIATION

Convention meetings at the Conrad Hilton just a jaunt up Wabash Avenue from the Coliseum. Sessions planned to help you solve your own problems and unite industry opinion in preparation for critical days ahead.

VISIT WITH US IN BOOTH 213

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- ☐ Bauxite
- ☐ Bentonite
- ☐ Bone, steamed
- ☐ Borax
- ☐ Calcium Carbonate
- ☐ Calcium Phosphates
- ☐ Carbon, activated
- ☐ Carbon Black
- ☐ Catalysts, Petroleum
- ☐ Cellulose Acetate
- ☐ Cement, Portland
- ☐ Cement Raw Material
- ☐ Chalk
- ☐ Chromite
- ☐ Clays
- ☐ Coal, pulverized
- ☐ Coke Dust
- ☐ Copper Converter Dust
- ☐ Corn Flakes (brewers')
- ☐ Corn Grits
- ☐ Cottonseed Meal
- ☐ Cryolite
- ☐ Cyanamid
- ☐ Detergent Powders
- ☐ Dextrin
- ☐ Diatomaceous Earth
- ☐ Dicyandiamide
- ☐ Dolomite
- ☐ Feed Ingredients
- ☐ Feeds, soft
- ☐ Feldspar
- ☐ Ferrochrome
- ☐ Fertilizers
- ☐ Flaxseed
- ☐ Flint
- ☐ Flue Dusts
- ☐ Fluorspar
- ☐ Fly Ash
- ☐ Fuller's Earth
- ☐ Gilsonite
- ☐ Graphite
- ☐ Gypsum (raw or calcined)
- ☐ Ilmenite
- ☐ Iron Salts
- ☐ Lime, hydrated
- ☐ Lime, pebble
- ☐ Lime, pulverized
- ☐ Limestone, pulverized
- ☐ Litharge
- ☐ Magnesite
- ☐ Magnesium Oxide
- ☐ Malt
- ☐ Manganese Dioxide
- ☐ Milk, dried
- ☐ Mineral Wool
- ☐ Nylon pellets
- ☐ Ores, pulverized
- ☐ Petroleum Coke (fluid process)
- ☐ Phosphate Rock, pulverized
- ☐ Polyethylene
- ☐ Pyrites
- ☐ Quartz, pulverized
- ☐ Resins, synthetic
- ☐ Rubber pellets
- ☐ Salt
- ☐ Salt Cake
- ☐ Silica, pulverized
- ☐ Slag, pulverized
- ☐ Slate, pulverized
- ☐ Soap Powders
- ☐ Soda Ash
- ☐ Sodium Bicarbonate
- ☐ Sodium Phosphates
- ☐ Starches
- ☐ Sugars, refined
- ☐ Talc
- ☐ Titanium Dioxide
- ☐ Wood Chips
- ☐ Wood Flour
- ☐ Zinc Oxide

NOW YOU CAN BUY AND CONVEY IN BULK

New profit opportunities await every company prepared to modernize its operations by buying materials in bulk and conveying them in sanitary, completely enclosed systems from railroad car or truck to storage, thence to process and shipping.

When you visit the Chemical Show, make it a point to drop by Booth 213 for a chat with experienced Fuller representatives about Fuller conveying systems, the way they are being profitably used to handle dry bulk materials, and how Fuller-engineered systems can help you make more money.

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A SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORP.
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G-124
1955

When You Specify Southern Tire Retreading

NO TIME LOST!
BIG MONEY SAVED!

NO TIME LOST . . .
Because Southern Tire representatives pick up and return your tires at your job site after work hours, assuring no costly equipment downtime.

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Because Southern Tire Retreads are guaranteed to equal new-tire mileage—at half the cost! Southern Tire's giant three-sectional molds (standard with U. S. Army) are fitted to the tire, instead of tire being cut down to fit mold. Finished retread has as much rubber in the lugs as a new tire and more undertread than any rock service tire.

CHOICE OF ROCK SERVICE, TRACTOR TYPES, OR RIB TREADS TO SUIT YOUR PARTICULAR JOB.

All Sizes from 1100x24 to 2700x33.
Also new sizes 29.5x25 and 29.5x29.
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Introducing
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Now! With the addition of new Hendrick Wedge Wire, Hendrick rounds out its line of screens for the best in efficient, low-cost screening, sifting, de-watering and filtering operations. New Hendrick Wedge Wire not only affords tops in dependability and performance, but it's ideal wherever it's highly important for screen openings to be minutely fine, and have excellent draining qualities yet have a high degree of accuracy and absolute rigidity. For details on Hendrick Wedge Wire's free clearance, rugged mechanical and lateral strength, maximum load carry capacity, percentage open area and long wearing life, contact your nearby Hendrick representative.

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For producers of Concrete Building Units, Pipe and Ready-Mixed Concrete

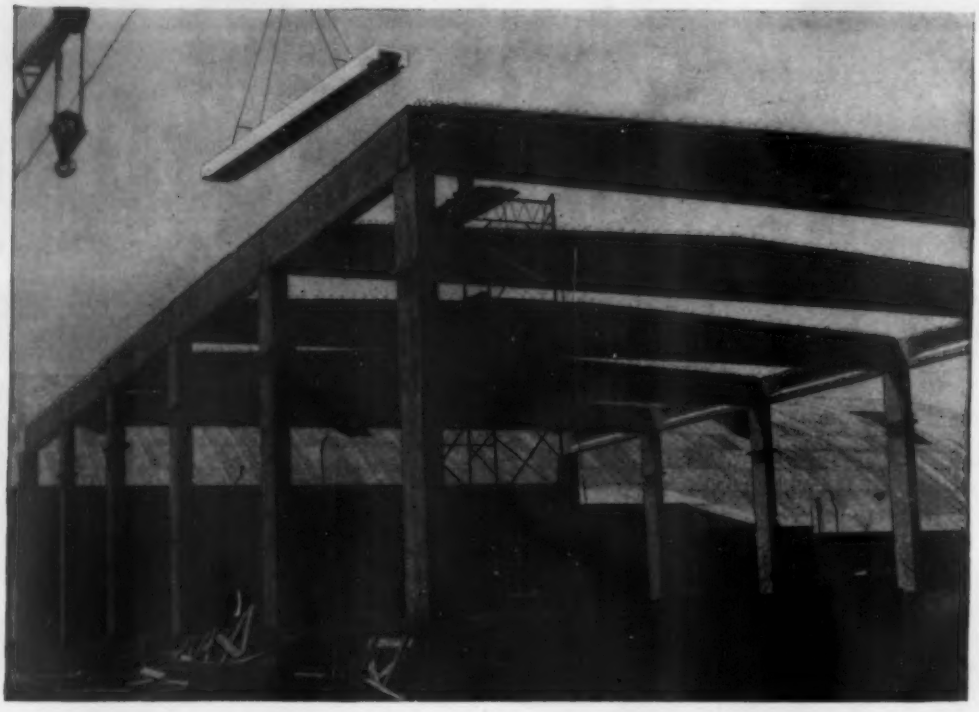
NOVEMBER 1955

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY

Precast Concrete Rigid Frames and Channel-Section Roof Slabs Are Features of This Unusual Home at Dallas Fair

75-FT. PRECAST, PRESTRESSED 'INCOR' CONCRETE GIRDERS USED IN UNIVERSITY OF MARYLAND SWIMMING POOL WING



PREFABRICATION... *summa cum laude*

● By making possible lighter members and longer spans, prestressing adds a new dimension to the high economy potential of precast concrete.

Precast, prestressed girders for this 75′ x 140′ Swimming Pool Wing to the Athletic Activities Building at the University of Maryland are 75′ long, 36″ deep at ends, 4′ 7″ at center, average depth-to-span ratio approximately 1:20.

All other structural members—the 14″ x 32″ x 23′ columns, 14″ x 36″ x 23′ spandrels, and the 10″ x 24″ x 23′ channelcrete lightweight roof slabs —are precast reinforced concrete.

Designed for span and load, these factory-made members were produced to closest tolerances by the Formigli Corporation, Berlin, N. J., for fast erection—"field practical" is the term for it. Prefabrication with a *summa cum laude!*

UNIVERSITY OF MARYLAND: Swimming Pool Wing

Architect:
HALL, BORDER & DONALDSON; Baltimore, Md.

Structural Engineer:
CARL HANSEN; Silver Spring, Md.

General Contractor:
BALTIMORE CONTRACTORS INC., Baltimore, Md.

Prestressed Members Made and Erected by
FORMIGLI CORPORATION
Berlin, N. J. . Philadelphia, Pa.

Here is the structural stability and fire-safety of well-designed concrete . . . with factory-made, quality-controlled members for lowest erection and maintenance costs... plus significant production economies through assembly-line operation in the pretensioning bench, utilizing the dependable high early strength of 'Incor'* 24-Hour Cement for 24-hour form removal... quality concrete which is so important in the fullest realization of prestressing's advantages.

*Reg. U. S. Pat. Off.

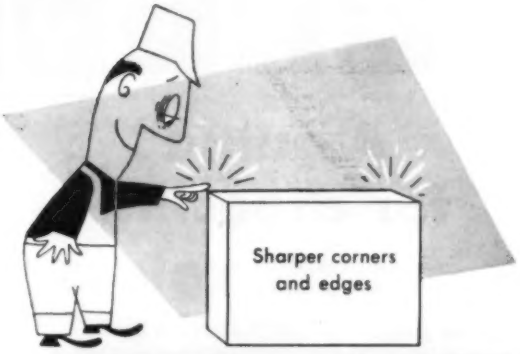
LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

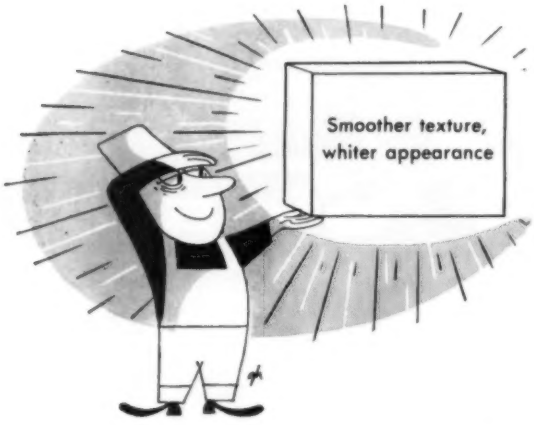
LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. • ALBANY, N. Y. • BETHLEHEM, PA. BIRMINGHAM • BOSTON • CHICAGO • DALLAS • HOUSTON INDIANAPOLIS • KANSAS CITY, MO. • NEW ORLEANS • NEW YORK NORFOLK • RICHMOND • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 141,600,000 SACKS ANNUAL CAPACITY

STRONGER concrete blocks





Block made with D-40. Note the fine texture, color and appearance—the sharp edges and corners.

with low-cost D-40

Ask us about the outstanding results concrete block manufacturers are getting by adding one to two ounces of dry, granular D-40 per bag of cement at the mixer. D-40 not only will help you make a greatly superior product but at the same time will reduce your operating costs.

D-40 is a ready-to-use additive supplied in economical 85# bags—available at conveniently located supply points throughout the United States.

Ready-mixed concrete producers have also found D-40 improves their product

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For complete information, samples and technical help, write or call the Oronite office nearest you.

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30 Rockefeller Plaza, New York 20, N.Y. • 20 North Wacker Drive, Chicago 6, Ill.
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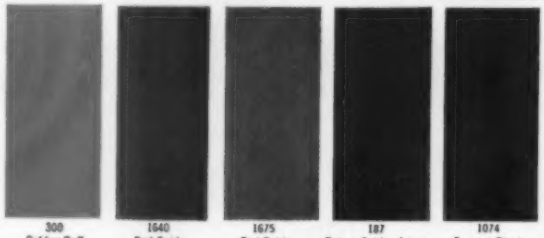

A guide for choosing concrete colors

For producers of split blocks, patio blocks, concrete blocks and other colored concrete products.

Manufacturers of colored concrete products agree . . . *The pigments they use must have these 3 important qualities:*

1. A high degree of tinting strength when added to the mix
2. Color uniformity year in, year out
3. The ability to incorporate easily

Manufacturers also require a pigments supplier whose technical department is capable and cooperative, whose shipping service is prompt and dependable.

Point for point, REICHARD-COULSTON quality-controlled pigments and dependable service meet *all* these requirements!

The shades shown above are just 5 of the many concrete colors manufactured by REICHARD-COULSTON. Included are yellows, buffs, maroons, grays, reds.

For a free color card, fill in and mail the coupon. Act now.

GENERAL RECOMMENDATIONS: PASTELS (*Split blocks and similar products*), 2-4 lbs. for each bag of cement. DEEP SHADES (*Patio blocks, concrete blocks, etc.*), 6-8 lbs. for each bag of cement.

Reichard-Coulston, Inc.

15 EAST 26th STREET, NEW YORK 10, N. Y.

Warehouses in principal cities; factory: Bethlehem, Pa.
Over a century of manufacturing and service

Natural IRON OXIDE PIGMENTS *Synthetic*

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CM-115

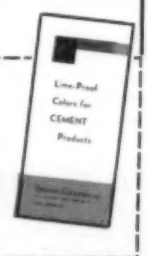
Gentlemen: **Please send me a free card of REICHARD-COULSTON concrete colors.**

My name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____



PORTLAND CEMENT

a new company
keeping pace with industry

TORONTO: 1901 STAR BUILDING TEL. EMpire 4-2816
HEAD OFFICE: VILLENEUVE, QUEBEC TEL. MOntcalm 3-7831

The CONCRETE MANUFACTURER

November 1955

Automation

AUTOMATION is a widely misunderstood word, especially by labor and labor unions. Judging from the statements made by some labor leaders, automation is a Frankenstein's monster of wheels, electricity, and control boxes which is going to create mass unemployment by replacing the worker in the factory. The "threat" of automation is becoming a pretext for a full range of welfare state demands, the argument being that mass purchasing power must be increased if automation is to be kept from causing overproduction.

Automation is actually only another word for mechanization and for more technological progress. Few of us realize that the biggest steps toward automation have already been taken, over a period of many years. What remains to be done in order to achieve actual automation is to further improve all manufacturing operations and to extend automatic operation into control, testing, packaging, etc. When a product can move throughout the entire range of treatment from raw material to packaged finished product in one uninterrupted mechanical flow, then full automation will have been achieved.

According to authorities, such a fully-automatic factory is many years away, and in some industries it will never be achieved.

Do machines actually destroy jobs and create unemployment? The facts prove otherwise. Between 1850 and 1953 the population of the United States increased from 23,000,000 to 161,000,000, or roughly seven times. Production, adjusted to today's prices, went up from $12,000,000,000 to $308,000,000,000, or 25 times. This was possible only because the extent of mechanization of industry went up from 6 percent in 1850 to 94 percent in 1953. That the workers did not suffer in this transition is evident from the fact that, while the population multiplied itself seven times, the number of workers increased from 7,500,000 to 67,000,000, a nine-fold increase. It is evident that mechanization causes jobs to increase faster than population or machines.

Machines and mechanization are actually responsible for the high standard of living in this country and the ideal conditions under which labor works.

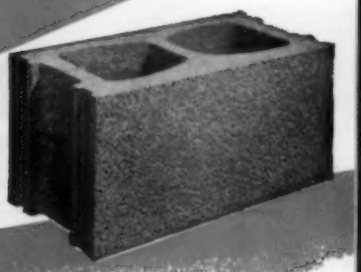
It is possible that delaying further mechanization of industry would be harmful to our economy. Without more mechanization to increase worker productivity, our standard of living will drop at least 10 percent before 1960, according to one authority.

There is no doubt that further technological advances by industry and the industrial development of the atom will cause drastic changes in our lives. The gradual shift from laboring on production lines to the more skilled work of making and operating "automatic" machines and plants will require new skills on the part of many workers.

But this is what has been going on for the last 15 years or more, and our workers have experienced no great difficulty in adjusting themselves. "Automation" will mean only a little more of the same.

Walter E. Trauffer

Only a Besser Vibrapac is *Fully CAM OPERATED!*



Illustrating the cam and roller principle of the Besser Vibrapac. Only a few moving parts. You get high production with these slow, revolving cams and long machine life.

Many concrete block plants are now running on a 24-hour a day schedule of uninterrupted production, day-in and day-out. This is made possible by the exclusive Besser cam and roller principle of power application which assures smooth, continuous operation.

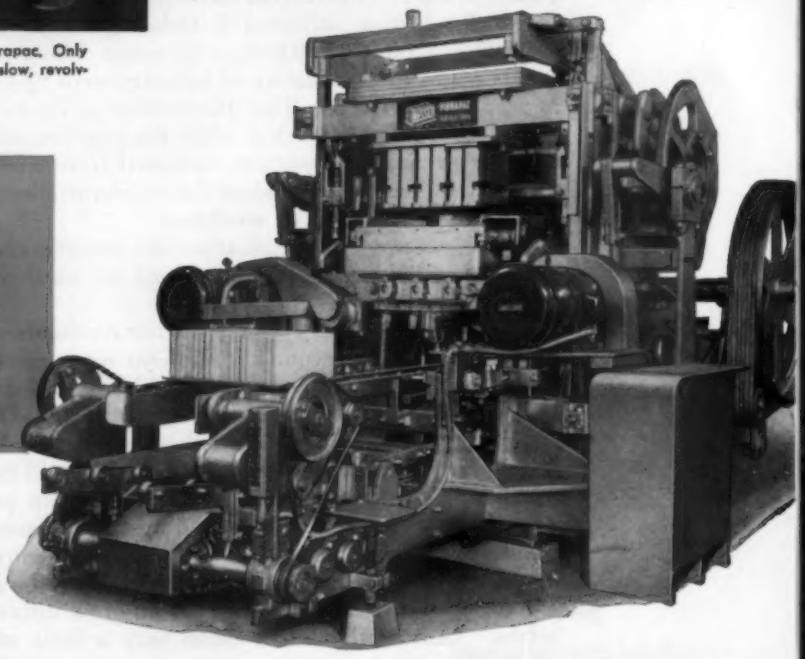
The rugged steel cams and heavy duty alloy steel rollers and large diameter shafts provide an exceptionally long service life and dependability. The cams are machined from a single piece of steel having a thickness of 2". The entire wearing surface is heat treated and hardened.

Let's examine a Vibrapac. You'll find there are no pistons . . . no valves . . . no leaking liquid . . . no interlocked operations. One operation does not trip the next. Each one is perfectly timed. There are no lost motions between the various operations of feeding . . . vibration . . . striking off surplus concrete. . . stripping finished block . . . delivering finished block to front of machine . . . and placing new pallet under mold. This accounts for the unusually high production of uniformly high quality block.

Only a Besser Vibrapac is fully cam operated. The rugged simplicity of the Besser Cam and Roller principle of operation is one of the greatest contributing factors to the universal acceptance of the Automatic Vibrapac.

A CAM has a Perfect Memory!

The cam and roller principle of operation is the simplest method of power application. A slow revolving cam, with a roller riding on its surface, actuates an arm that delivers power with pin point precision and with steady, uninterrupted regularity. A cam virtually "thinks" for you . . . has a perfect memory.



Front Pallet Feed Vibrapac
— the modern, fully automatic concrete block machine. Produces three 8" x 8" x 16" modular units at a time on one plain pallet. Other sizes produced in equivalent multiples on the same set of plain pallets. No machine operator is required. Hand labor is reduced to pushing a switch button and guiding a power offbearing hoist. One man removes finished block, and, with no lost motion, returns empty pallets to the Vibrapac.

A 7280-1

BESSER COMPANY

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Complete Equipment for Concrete Block Plants

News of the Concrete Industries

Thorold Concrete Block Co. Producing Autoclaved Units In New $375,000 Facilities

Early in September Thorold Concrete Block Company, Ltd., opened one of Canada's most modern plants in Hamilton, Ont., for the manufacture of Thoro-Clave (trade name for the firm's autoclaved block) and other quality masonry units. It is reportedly the only plant in Canada designed especially for the autoclaving process, and one of the few employing high-pressure curing.

Strategically located at the junction of Route 20 and the Queen Elizabeth Highway, the new $375,000 plant has two autoclave units 8½ ft. in diameter and 106 ft. long.

Although primarily designed for the ultimate in efficiency, the plant utilizes concrete block in a most attractive and dramatic way. Plant layout, design, and construction were all handled by Thorold Concrete Block Co. personnel. This facility is designed so that the entire operation eventually will be automatic.

Opening of the Hamilton plant is a significant step in the expansion of the firm, which is already well known in the concrete block field. (Thorold will continue to operate its home plant in Thorold, Ont.) The business began to grow in 1923, when Guiseppe Pennachetti, father of the company's present president, John Pennachetti, purchased a half-interest in a concrete products firm.

The two big cylindrical steel autoclaves will initially pressure-cure 12,000 block per day by a two-cycle process.

In addition to Thoro-Clave lightweight block, the firm will also manufacture a permanently-glazed autoclaved block known as Spectra-Glaze.

• This attractive exhibit of concrete masonry, prepared by the Honolulu Construction and Draying Company, Ltd., recently won high honors at a state fair in Honolulu. Units used in the curved bar are marketed under the name of Tapestry Bloc. The dark block at the sides and top of the barbecue pit, known as Lava Bloc, is black and has a surface resembling cinder block. In the wall at the right may be seen a reproduction of the diamond design which elicited much favorable comment when it was featured in a "room for a man" exhibit at the Los Angeles County Fair in 1954.

Corbetta Re-elected Head of Concrete Industry Board

Roger H. Corbetta, president of the Corbetta Construction Co., Inc., New York, N. Y., has been re-elected chairman of the Concrete Industry Board, Inc., of New York City for the fifth year. Other officers re-elected at the recent C.I.B. annual meeting were William J. McIntosh, secretary, and Dugald J. Cameron, treasurer.

The following were elected directors: Mr. Corbetta, Fred E. Schilling, and H. E. Tear, representing the Cement League; Mr. Cameron, the Concrete Reinforcing Steel Institute; Joseph Di Stasio Sr., the Structural Engineers Society; M. J. McMillan, the Portland Cement Association; M. W. Del Gaudio, the Architects Council of New York City; Elliot Haller, testing laboratories; Anthony Pope, ready-mix concrete suppliers; Emil Praeger, the American Society of Civil Engineers; and Frederick S. Merritt, the technical press.

This organization, set up five years ago for the purpose of improving and expanding concrete building construction, now has a total membership of 198 in the New York metropolitan area.

Coming Events

November 14-16, 1955—St. Louis. Fifth Annual Short Course School of Instruction, American Concrete Pipe Association. Chase Hotel.

November 21-23, 1955—Houston. 12th annual meeting, Southeastern Concrete Masonry Association (in conjunction with Texas Concrete Masonry Assn.). The Shamrock Hotel.

January 23-25, 1956—New Orleans. 36th annual convention, National Concrete Masonry Association. Roosevelt Hotel.

January 29-February 2, 1956—Chicago. 37th annual meeting, Associated Equipment Distributors. The Conrad Hilton Hotel.

February 13-16, 1956 — Chicago. 26th annual convention and biennial exhibit, National Ready Mixed Concrete Association. Headquarters, Conrad Hilton Hotel; exhibit. Coliseum.

March 6-10, 1956—Colorado Springs. 48th annual convention, American Concrete Pipe Association. Broadmoor Hotel.

April 12-14, 1956—Denver. Sixth annual convention, American Concrete Agricultural Pipe Association. Brown Palace Hotel.

READ OUR MAIL

ABOUT THE IMC INSTANT MOISTURE CONTROL INSTALLATION at FLOYD PAPPIN & SON, INC.
Great Falls, Montana

FLOYD PAPPIN & SON, INC.
CERTIFIED READY-MIXED CONCRETE

Oct. 8, 1954

Colorado Premix Concrete Co.
1021 W. Mississippi Ave.
Denver, Colorado

Dear Sir:

Since the installation of your Instant Moisture Control in our plant, we have been provided the control for obtaining concrete of uniform consistency. Engineers, architects and contractors have time and again congratulated us on producing specified slump concrete so consistently. The worry of varying slump concrete on strictly controlled jobs has been eliminated. We have been able to go through the entire summer without any rejected loads of concrete due to unspecified slump.

The Instant Moisture Control has been most dependable. It has given our batch man an unlimited amount of confidence in his work. This has shown up in his time-saving operational procedures. "Time" which is so important in the ready mixed concrete business has been saved considerably this year due to the uniformity of concrete loads.

This time saved has meant money earned by our company. We feel that the Instant Moisture Control earned this money and is therefore an integral part of our operations. We wouldn't be without it.

Yours very truly,
FLOYD PAPPIN & SON, INC.
Floyd Pappin

IMC can STOP CASH LOSSES IN YOUR OPERATION

to find out how, write

INSTANT MOISTURE CONTROL
A Division of Colorado Premix Concrete Co.
1021 W. Mississippi Denver, Colorado
IMC

Mr. Reinhold, prize winner David Taylor, and friend take a bow. David got $1,029; his friend got the ax.

Fred Reinhold Buys Hamburger—And Sends a Boy to College!

One of the many worthy extracurricular activities indulged in by Frederick W. Reinhold, president, Anchor Concrete Products, Inc., Buffalo, N. Y., was revealed recently, as pictured here. It shows him congratulating young David Taylor, of Lawtons, N. Y., who raised the grand champion steer of the Erie County (N. Y.) Fair, at Hamburg, N. Y., just after Mr. Reinhold had paid an all-time high price of $1.30 per lb. for the 792-lb. prize Angus.

The money—$1,029—will be used by David for his college education. To make the transaction doubly worthy, Fred Reinhold acted in his usual way, donating the beef to the Methodist Children's Home at nearby Williamsville, N. Y. It should provide the kids with hamburger for quite a while.

Cement, Concrete Technology Covered in 2-Volume Work

Publication of Volume I of *The Technology of Cement and Concrete* has been announced by the authors, Robert F. Blanks and Henry L. Kennedy. Mr. Blanks is vice-president and general manager of Great Western Aggregates, Inc., Denver, Colo., and Mr. Kennedy is manager, Construction Specialties Division, Dewey and Almy Chemical Company, Cambridge, Mass.

Volume I, which deals with concrete materials, is the first portion of a projected two-volume work on concrete which sets out to tell the facts about its subject matter in simple language and in a logical manner. Its main emphasis is upon portland cement and aggregates, the most important ingredients of concrete. It also contains data on phases of the subject on which information is not readily available in ordinary reference works.

Volume II, now in preparation, will cover the most effective combinations of the various materials and the properties and uses of the resulting concretes. The publisher is John Wiley & Sons, Ltd., London; price, $11 per copy.

$100,000 Mixing Plant Installed At Fresno, Calif., Operation

The Pollards Concrete Company of Fresno, Calif., recently completed installation of a new $100,000 mixing plant.

Although the installation is said to have the highest capacity of any plant of its kind west of the Mississippi River, operation of the electronically-controlled layout requires the attention of only one man.

The plant turns out 180 cu. yd. of concrete an hour — enough for 40 transit-mix trucks—and deliveries are made within a 30-mile radius of Fresno. There are 12 transit-mix trucks and 40 employes in the overall operation.

M. (Matt) Kammerer, 88, died recently at Brokaw hospital, Normal, Ill., after an illness of several months' duration. He was the founder of the Kammerer Concrete Company of East Peoria, Ill., and served as its president until his retirement in 1945.

DOW

CONCRETE SETS 100% TO 500% FASTER WITH DOWFLAKE ADDED

Transit-mix companies find 25-lb. bag an accurate measuring unit

Concrete construction is high-speed production. But an outmoded process can wreck tight schedules. Days are lost. Labor idles. Dowflake® (Dow calcium chloride 77-80%) is one way to insure fast work. Setting time is a case in point. At 25° concrete takes 6 weeks to reach a strength of 2000 psi. Time is wasted. Costs go up. Add 2% of Dowflake and time is slashed to 7½ days. Concrete is more workable. Its ultimate strength is greater. At any temperature it will set stronger faster with Dowflake.

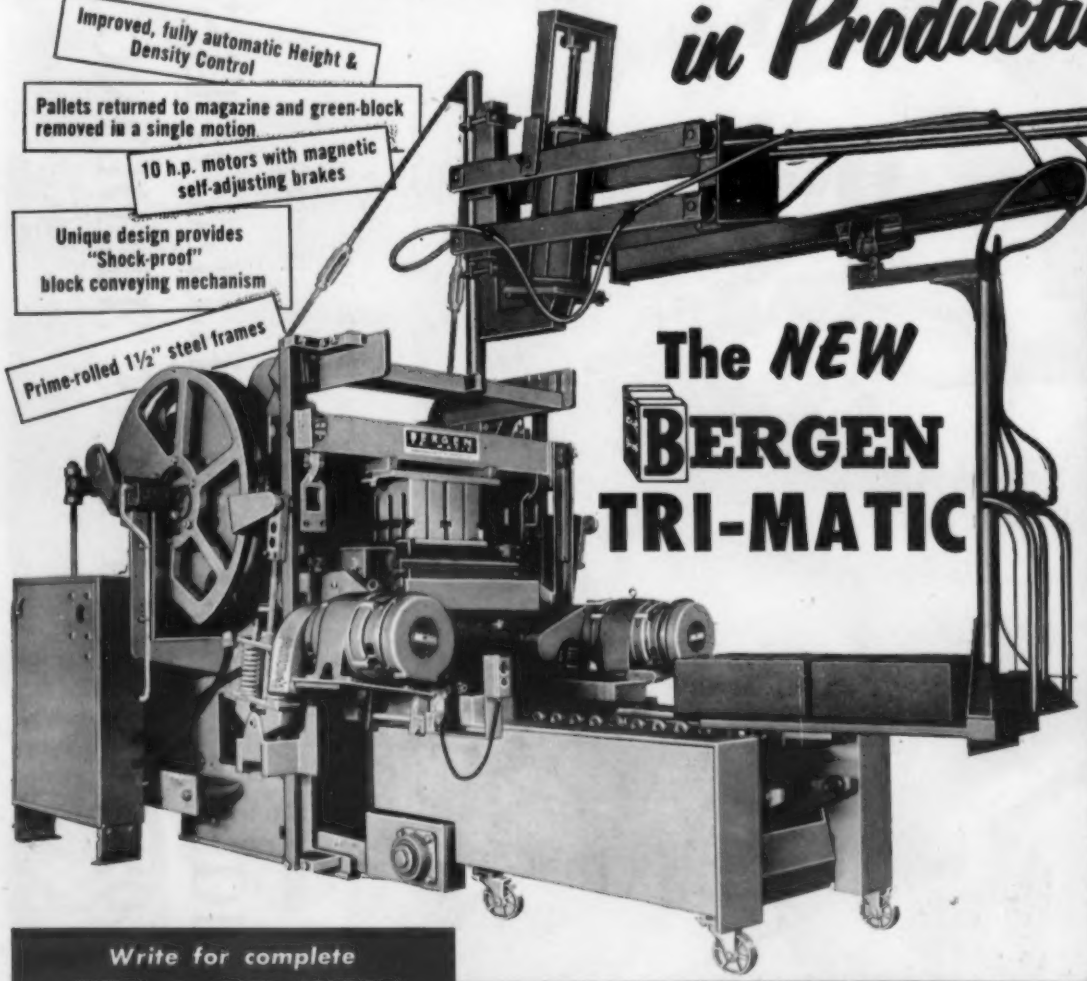
With the 25-lb. bag you can add Dowflake with ABC simplicity. Human error is virtually eliminated. Just add one bag to a five-yard batch (five bags cement per yard) to obtain 1% Dowflake. Two bags for 2%. It's fast, light work and can be done at the plant or on the job site. No loss through spillage. No awkward bucket measures to handle. No wonder the 25-lb. bag is becoming so popular.

Keep ahead of tight schedules. Increase concrete strength and setting speed. Do it the easy way with Dowflake in the 25-lb. bag. Write to THE DOW CHEMICAL COMPANY, Dept. IN 911T-2, Midland, Michigan.

you can depend on DOW CHEMICALS

DOW

Unequalled *in Production Capacity*


Improved, fully automatic Height & Density Control
Pallets returned to magazine and green-block removed in a single motion
10 h.p. motors with magnetic self-adjusting brakes
Unique design provides "Shock-proof" block conveying mechanism
Prime-rolled 1½" steel frames

The *NEW* BERGEN TRI-MATIC

Versatility	All standard sizes and many special types of block can be made on a single 18½x26" plain pallet.
Design	The TRI-MATIC operates on the time-proven positive-acting cam, roller and lever arm principle.
Production	Up to 6 mold cycles per minute, yielding an average production of 10,000 — 8" equivalent units per typical 10 hour day.
Power	Super power to provide highest intensity vibration, with maximum rate of compression producing units of controlled density and uniform texture.
Performance	Engineered and built to provide continuous high production operation under the most exacting operational conditions.

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BERGEN MACHINE & TOOL CO., INC., NUTLEY, NEW JERSEY
Cable address: "BERGENCO" (Nutley, N. J.)

Home That Haydite Built Wins Popular Applause At Dallas Home Show

Although engineers have used the concrete rigid-frame construction system for many years in commercial and public buildings, it has only recently been receiving serious attention in the field of residential building. The speed of erection, low maintenance cost, long life, fire safety, and large uninterrupted interior spans which are possible with concrete have stimulated certain progressive companies and individuals to educate the general public to the advantages available from the use of this system.

"Rhapsody House"—designed and built for the Dallas (Tex.) County 1955 Parade of Homes—serves to enlighten visitors not only to the above-mentioned advantages but also graphically underlines the beauty that can be incorporated into a design which employs concrete.

One of the two new facets of home building in this unusual house is the use of lightweight concrete for the frame, walls, floors, and roof. Precast concrete frames were supplied by the Texcrete Structural Products Company; Texcrete Haydite masonry units and Holiday Hill stone were obtained from the Texcrete Company; and the practical Haydite driveway is made of products from the Dallas Lightweight Aggregate Company.

Second of the new home building facets is the use of curtain wall construction. Although this construction method has been the standard plan of construction for multi-story building for 35 or 40 years, the problems of using steel frames and poured-in-place concrete have discouraged home builders from employing curtain wall methods.

In "Rhapsody House", however, these problems have been met and effectively overcome. Use of precast concrete frames, masonry units, and decorative concrete blocks not only simplified and speeded building but in this house it pointedly demonstrated to the 203,887 persons attending the show that in addition to low maintenance, long life, and safety, concrete has a new dimension of true beauty.

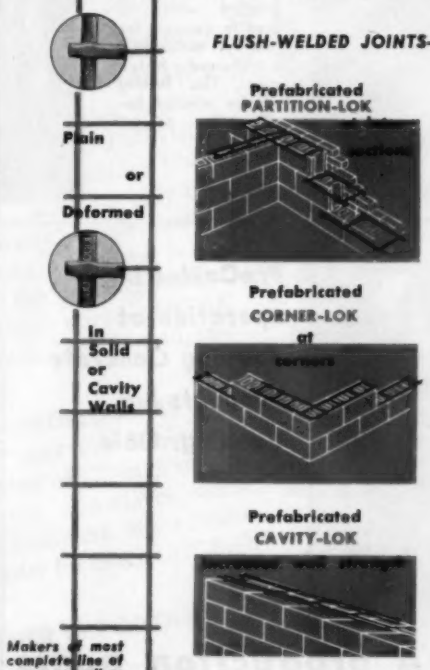
Visitors made many favorable comments on the attractiveness of the masonry walls which were set up in stacked bond with raked mortar joints as an admirable foil and complement to the strong horizontal accents set up by the exposed roof channels.

Preplanning and prefabrication paid off in quick erection time — only seven weeks — in the "Rhapsody House". This photograph shows the structural key to the construction of the house — the nine pairs of bents.

Build Better Walls with Quality Guaranteed

BLOK-LOK

FLUSH-WELDED JOINTS—STRONGEST BY COMPARISON



Finishes

Galvanized wire, hot-dipped galvanized and brite basic.

BLOK-LOK Standard 9 gauge steel wire

BLOK-LOK Special Standard 8 ga. deformed side rods, 10 gauge galvanized cross rods, 16" centers

BLOK-LOK Heavy 3/16" rod with 9 ga. cross member

FS-Standard 8 ga. deformed side rods by 12 ga. cross rods flush welded on 16" centers, all galvanized wire.

YOUR ASSURANCE OF

- **Small Masonry Joints**
- **Minimum Job Breakage**
- **Maximum Structural Strength**
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Extensive testing laboratory reports serve to confirm the sound engineering of Blok-Lok's design. Exceeds requirements of A.S.T.M. specifications A-82-34 and A-15-52T.

Distributors and dealers located in all major cities of U.S. and Canada.

FREE—Concrete Block Wall Calculator identifies number of blocks required. WRITE FOR YOURS TODAY

Flush Welded Joint

BLOK-LOK neatly and securely bundled, in 12-ft. or 10-ft. lengths (25 pieces each), in heavy weight cardboard wrappers; ends plainly printed to identify type and size for inventory and order-filling convenience.

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Borchers Bros. Expanding Business Necessitates 2nd Batching Plant

SAN Jose was a very small California town when Borchers Bros. established a building-supply business there a few years before the turn of the century. During its growth over the 60 years since that time this firm pioneered in the use of ready-mixed concrete and its main batching plant in San Jose continues to be the city's main r.m.c. source.

About a year ago, rapid industrialization and tract-housing activities on a large scale north of San Jose and east of the lower reaches of San Francisco Bay, prompted the company to further expand its operations by erecting another batching plant near the town of Warm Springs. This plant, which began supplying concrete in the late fall of 1954, is a complete Noble installation capable of batching 120 cu. yd. of concrete hourly. Aggregate capacity in the 4-compartment overhead bin is 240 tons; it is filled by a 200-ft. long conveyor equipped with an American Rubber belt. Aggregates are purchased and delivered into a truck-hopper feeding the conveyor. Bulk cement is used exclusively, and it is stored in a 500-bbl. silo.

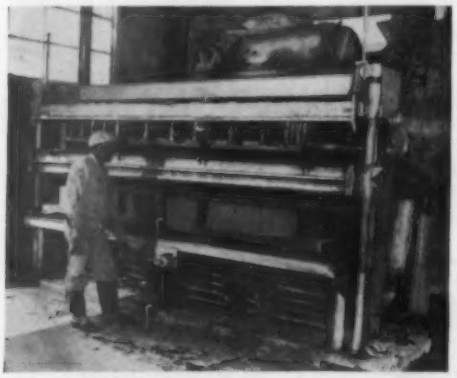
Left: The No. 1 plant of Borchers Bros. at Warm Springs, Calif., looking from the tail end of the aggregates conveyor.

Right: A closeup shows the crane (right) which is used to excavate for footings to support a second batch plant. This facility will be erected beside the present plant.

Demand for the product was so great at the outset that before long the company was laying plans for doubling the capacity of the Warm Springs operation by erecting an identical Noble plant adjacent to the first one. Excavations for the footings were in progress when the plant was visited about July 1, 1955, and the twin plants were expected to be in operation early in the fall. Each of the units has 5-cu. yd. weigh hoppers for aggregates.

The Borchers concern operates a fleet of about 30 transit mixers which can be dispatched to any of the batching plants as needed. Most of these are of a horizontal-drum, revolving-blade design originated and built by company personnel.

Arthur W. Caldwell is president of Borchers Brothers. Bob Anderson manages the Warm Springs plants, and Ralph Kellam is general supervisor of concrete-operations.



PreCaster in operation at Reading Concrete Products Inc. Reading, Ohio

lintels now on a production basis

- Reading Concrete Products says that a few years ago they hesitated to take orders for precast items like lintels, fence posts, highway guard rail posts, etc., as their production by hand methods was very limited and their costs high.
- All this has been changed by their *PreCaster*. They now produce these items on a production basis with cost comparable to other concrete items they manufacture. They produce lintels on the *PreCaster* at the rate of 800 to 1000 feet per day . . . color and texture comparing favorably to their block.
- They write: "Now you can realize why we consider our PreCaster purchase a very wise investment.
- *Write today for PreCaster's new catalog detailing seven profit opportunities.*

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TESTED, PROVED and ENDORSED by the Concrete Block Industry

Columbia 12"-HIGH enables you to INSURE YOUR BUSINESS FUTURE with one concrete block machine! Your first cost can be low...you buy only the molds you need for today's production of standard block. Then, when you see a chance to step into the growing market for 12"-high specialty units, YOU'RE READY! Order the molds you need, and you're in business!

COLUMBIA 12"-HIGH MAKES

all standard 4", 6" and 8"-inch block, as well as a wide variety of 12"-high shapes, including drain tile, silo staves, water meter boxes, flue liners, etc. We will also make molds to order for special 12"-high face block units.

HERE'S ANOTHER IMPORTANT FEATURE:

All 12"-HIGH machines are now equipped to take 18½x26-inch pallets, as well as standard plain 18x20-inch pallets. YOUR PRESENT RACKS AND PALLETS CAN BE USED ON YOUR NEW 12"-HIGH MACHINE.

COLUMBIA 12" HIGH FEATURES:

- Electronic controls, hydraulic operation.
- 4 to 6 cycles per minute on standard plain 18 x 20 or 18½ x 26 pallets.
- Superfast agitation, insuring uniform aggregate delivery to molds.
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Write, wire or phone today for full information on the Columbia line.

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With a C & W Electronic Moisture Meter you may now measure the moisture content of your sand

INSTANTLY!

ACCURATELY!

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YES — Its Operation Is Instantaneous
Its Readings Are Extremely Accurate
Its As Economical to Operate as a 100-Watt Light Bulb
Its Low Initial Cost Makes It Possible for Every Batch Plant to Have the Advantage of the Use of the New, Improved, C & W Electronic Moisture Meter.

Eliminate those "too wet" loads that leave your plant before your batch operator knows that there has been a moisture change.

Eliminate the time and money wasted adding water at the job site and then remixing a load on expensive truck time if the batch is too dry.

Take the guess work out of making your concrete and really have control of your slump.

Install a C & W Electronic Moisture Meter in your plant and save both time and money.

Complete with installation instructions, only $569.00 F.O.B. San Francisco.

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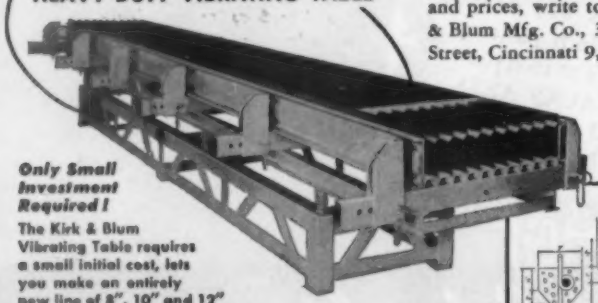
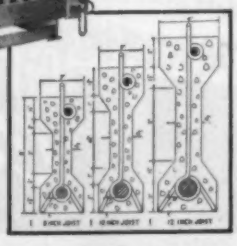
PRODUCE CONCRETE JOISTS, LINTELS AND FENCE POSTS with the KIRK & BLUM HEAVY DUTY VIBRATING TABLE

Your experience in the building trade should make it easy to build up a profitable business in this new line. The products are simple to make, have unusual strength, are termite proof. The KIRK & BLUM Type "S" Heavy Duty Vibrating Table is capable of multi-production of concrete joists, allowing a fine profit-margin. Easily produced by unskilled operators. For complete details and prices, write to The Kirk & Blum Mfg. Co., 3112 Forrer Street, Cincinnati 9, Ohio.





Only Small Investment Required!

The Kirk & Blum Vibrating Table requires a small initial cost, lets you make an entirely new line of 8", 10" and 12" joists in 20 and 24 ft. lengths.

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Manufacturers of steel forms of all types . . . Curb, Gutter, Sewer, Road

Hovey Concrete Products $500,000 Expansion Plan To Increase Output 800%

A $500,000 expansion which will greatly increase the capacity of Hovey Concrete Products, Inc., Flint, Mich., is nearing completion, according to Sherwin Palmer, president and manager.

Transit mix capacity has been increased from 300 to 2,400 cu. yd. per day, and the number of concrete blocks manufactured daily has jumped from 16,000 to 25,000. Modern electronically-controlled equipment has been installed, along with the construction of additional plant structures covering 25,000 sq. ft. of space. Additions to mobile equipment include 10 transit, 4 block, and 8 gravel trucks.

The number of employees has been increased from 60 to 80. Carl Creiger is vice-president and general manager of the plant. The transit-mix division is supervised by Michael Salerno.

Consolidated of Los Angeles Buys Canoga Park R.M.C.

Already the operator of one of the largest chains of ready-mixed concrete plants in the country—25 at last count—Consolidated Rock Products Company of Los Angeles recently acquired ownership and operation of Canoga Park Ready Mix Concrete, Inc., Canoga Park, Calif. The addition allows the company better to serve the western end of the growing San Fernando Valley area.

Equipment involved in the deal included a C S. Johnson batching plant, 19 truck-mixers, a Lima crane, and several other trucks.

Practically, the entire personnel of the Canoga Park operation was retained by Consolidated.

Wisconsin Products Firm Cited for Micro-Advertising

Mid-States Concrete Products Company of Beloit, Wis., has been voted the "Joshua" award for the most distinguished use of match book advertising by a concrete products firm in 1955, according to Charles Furcolowe, director of the Match Industry Information Bureau.

The award-winning match book promoting the long-span, pre-cast, pre-stressed concrete slabs was selected by the panel of judges on the basis of the detailed data provided by the match book. A chart on the inner surface of the match cover shows the maximum load in pounds per square foot allowable in 14 lengths of clear span ranging from 14.9 in. to 27 ft.

WHITE MAGIC

...FOR CONCRETE PRODUCTS!

You can perform white magic in your concrete product! Use Medusa "the original" White Portland Cement for cast stone, concrete blocks, concrete brick and tile, curbing, ornamental concrete, fence and marking posts and many other products, and notice the amazing results. You'll be amazed at their white or colored beauty . . . a new clean look that sets your products apart from any competitors. That's because in all the world there is no whiteness like the diamond blue white of Medusa White. Concrete products manufacturers in every state have built successful business by taking full advantage of the magic of Medusa White . . . And for products whose beauty lasts indefinitely they use Medusa White *Waterproofed*. It sheds water and dirt . . . keeps concrete products free from dirt soiling for years to come.

Medusa White used in the manufacture of Cast Stone for the J. L. Long Junior High School, Dallas, Texas.

MEDUSA Portland Cement Company

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WHITE TILE GROUT CEMENT

MAKERS OF AMERICA'S FINEST PORTLAND CEMENTS FOR OVER SIXTY YEARS

Multiple-Fork Lift Truck Pays Its Way in One Year At Wisconsin Block Plant

By an unusual use of a 10-fork lift bed handling up to 180 8-in. equivalents at a time, a new 8,000-lb. capacity lift truck has more than paid for itself within the first year of use at the Janesville Sand and Gravel Company, Janesville, Wis.

The company, founded in 1907, started producing concrete blocks in 1946.* Expansions from the original production of sand and gravel included the successive installations of five larger gravel plants at different locations on the property, and of a ready-mixed concrete plant in 1940. The volume of business has grown steadily since the inception of the company, and as it grew, the more efficient use of equipment of increasingly larger capacities paralleled its growth.

Concrete blocks and warehouse goods are now sold by the company through more than 200 lumber yards and building material dealers in southern Wisconsin and northern Illinois. Much of this volume of blocks must be rapidly loaded onto incoming trucks of these dealers from the large stock maintained in the extensive storage area of the plant. The necessity of stocking adequate quantities of each size of block necessitated 15-tier piles in the yard and 20-unit heights in the covered storage since ground area had to be conserved. This in turn required lift truck equipment of high capacity and high reach.

Handling equipment previously used by the company included several 4000-lb. capacity lift trucks and one 6,000-lb. unit. All of these trucks had only the normal complement of forks for handling cubes of blocks. A good portion of the total output were lightweight units made with Waylite aggregates and for this reason the volume rather than the weight of the load was the governing limit. Few loads approached the weight capacity of the old lift trucks.

The new lift truck, a Hyster model ZA-80 of 8,000-lb. lift capacity, has replaced two 4,000-lb. units It is able to carry twice the load, thus effecting a double economy in equipment and labor. This saving in the first year has matched the cost of the equipment and has resulted in speedier loading and other time economy. In the first ten months of operation the new truck was used 1,050 hours. Average sized loads handled included 180 8-in., 120 10-in or 12-in. Waylite units, or 90 10-in. or 12-in. sand and gravel concrete blocks.

The 6,000-lb. capacity Hyster model XA-60 lift truck owned by the company was retained, but was equipped with a wider, five-fork bed, to handle its capacity in weight and in larger volume of blocks per load.

The special block-handling forks used on both lift trucks were manufactured by J. P. Waite, Inc., Milwaukee, Wis. These forks are 38½ in. long and 2 in. square, being tapered to slide readily into the block core holes of the bottom tier of units and on through five widths of 8-in. blocks. Both lift trucks are equipped with side shift carriages, facilitating ready pickup of the loads without jockeying and resulting in additional time saving in setting the loads snugly in place on the truck bed. The high reach of the new unit permits placing loads of blocks to a 12-ft. height, or 15 tiers.

Small platform lift trucks are used to convey the racked blocks from the curing kilns to the cubing space in the yard, where they are cubed by hand into the various quantities for stockpiling. All operating areas in the yard are concrete-surfaced, which permits fast, smooth movement and easy maneuvering of the pneumatic-tired lift trucks with the heavy loads they carry.

Effective concrete block handling with a wide, ten-fork lift truck in the storage yard of the Janesville Sand and Gravel Company, Janesville, Wis.

Orderly stocking of blocks and fast precision load handling make for profits in the use of high-capacity equipment.

The two lift trucks are equipped with wide fork lift beds for maximum loads, both in volume and weight.

*Described in Pit and Quarry, June, 1953, page 115.)

Output of Dutch Paving Unit Lags Behind Growing Demand

Interlocking I-shaped concrete paving stones made by a Netherlands concern are arousing much interest in this country, as well as on the Continent.

Manufacturer of the new units is N. V. Schakbeton of Zeist, a firm which has had to erect a new fully automatic plant in order to meet "world demand" for its product, a unit which is made in such a way that it cannot shift out of place in a pavement. The new plant has increased production from about 4,000,000 sq. ft. per year to more than 7,000,000 sq. ft., and management spokesmen state that even this increase in output is not sufficient to meet the growing demand. Construction of other plants is being considered, in order to step up production to 16,000,000 sq. ft. annually.

Arrangements are reportedly in progress to produce the paving units (under license) in other countries, including the United States.

N. T. Rykken, who was for the last seven years manager of Whitney Ready Mix in Duluth, Minn., has accepted the post of general manager of the Virginia (Minn.) Ready-Mix Concrete Company. Mr. Rykken is secretary-treasurer of the North Central Ready-Mix Association and also a member of the American Concrete Institute. He was formerly associated with the Portland Cement Association.

★ ★ ★ ★ ★ ★ ★ ★ **STEARNS** ★ ★ ★ ★ ★ ★ ★ ★

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Rx Ready Mix

By Harry F. Thomson

Standard Specification Often Ignored

THE term "C94" should be commonplace in every ready-mix plant—small as well as large—because it is the official designation of the A.S.T.M. Specifications for Ready-Mixed Concrete. Although this document is the "code" for the guidance of ready-mix production, at least one of its provisions is ignored daily in some plants. Many of these violations may result from lack of familiarity with the details of the standard specifications.

The full designation for the current document is C94-54T. Although there had been earlier versions of C94 which had been adopted by A.S.T.M. as "standards", the revision adopted in 1954 was designated as "tentative" (hence the T) because the conservative practice of the Testing Society requires that a revision of a specification be classed as tentative for a trial period, after which by further vote it may be advanced to a standard. The principal change introduced in the 1954 version was a provision giving approval to mixing in a truck-mixer a batch larger than the manufacturer's rated capacity; the average has been established by reference as ½ cu. yd.

C94 constitutes a general purchase specification for ready-mix. It has not as yet been used by specification writers as widely as appears justified, partly due to a lack of understanding on the part of many architects and engineers that it is available. Many ready-mix producers have distributed copies to designers of projects in their areas. All producers woud perform a service to their customers by distributing copies to those interested in concrete and discussing the import of the provisions.

If the general specifications for a project contain requirements applicable to ready-mix, such clauses would, of course, govern. But if it is anticipated that ready-mix will be used on a project (probably over 80 percent of urban concrete construction aside from paving is now served by ready-mix), then the job specification would be simplified by providing that concrete shall be furnished in accordance with C94 and indicating which of two alternatives shall govern quality.

Under Alternate No. 1 the purchaser assumes responsibility for the design of the concrete by specifying cement content, size of coarse aggregate, maximum water content, and slump desired at delivery.

Under Alternate No. 2 the purchaser specifies the following: minimum compressive strength at 28 days or other named age, size of coarse aggregate, and slump desired at delivery; under this alternate the producer becomes responsible for the design. A specification embodying one of these alternates avoids much of the confusion caused by some pigeon-hole specifications which name cement content (or proportions), strength, slump, and water content all simultaneously. C94 also contains useful tables suggesting (1) water content, and (2) compressive strengths suitable for various conditions of exposure. Even though concrete for the project may not necessarily be ready-mix, familiarity with these alternates and the two tables is very desirable for any specification writer.

As there is broad acceptance of A.S.T.M. standards for sampling, molding, curing, and testing concrete, so also C94 presents the accepted standards for the production of ready-mix. Many commercial producers have found it convenient to state in a sales agreement that the concrete will be mixed and delivered in accordance with C94, which means that all applicable provisions will be complied with. This practice also makes a good impression on the customer. However, several of the items are frequently ignored. In such cases the seller's guarantee is actually broken, regardless of whether the quality is seriously affected by the noncompliance or not. Some of the more commonly ignored items are mentioned in the following paragraphs.

Regarding admixtures, two provisions of C94 are not always watched. (1) It is provided that "when air-entraining concrete is specified and an admixture is used to secure the desired air content, the admixture shall conform to the A.S.T.M. Standard Specifications for Air-Entraining Admixtures for Concrete." It is easy to overlook ascertaining that the admix being used does comply with this requirement. (2) It is also provided that "when it is desired to use admixtures for purposes other than entrainment of air, such use shall be provided in the contract or in the designated applicable specifications." Thus the use of an admix or other ingredient which presumably would permit "redesign" of the quantity of cement should have the specific approval of the customer.

The tolerance in slump provided in C94 depends on the specification provision. For 3 in. or less, the permitted tolerance is plus or minus ½ in.; when greater than 3 in., the tolerance is plus or minus 1 in. A delivery of concrete with slump outside these tolerances would not be in compliance. The use of a higher water content than that given in the specification would also be a violation.

Many of the older batching plants are equipped with a single scale for cumulative weighing of sand, cement, and aggregates, with a separate poise and section of the beam for each material. With this arrangement any error in weighing the first material may result in an opposite error in weighing the second material; and a cumulative error for the first two materials may result in an opposite error for the third material. Thus, if the aggregate and sand are weighed with a cumulative over-run of 100 lb., the weight of the cement may be short by that same 100 lb. With the intent of preventing such an error the 1954 revision of C94 states, "When cement is measured by weight, it shall be weighed on a scale separate from those used for other materials."

Although a separate scale and weigh-hopper for cement represent additional investment, most of the more recent plants are so equipped, with a view toward greatest accuracy in batching. Many public agencies, including most of the state highway departments, require that

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plants serving their work shall have a separate scale for cement. However, it has been pointed out that if the cement is weighed first, rather than last, the possibility of error in its weight would be avoided. It is possible that the A.S.T.M. committee which is responsible for C94 may consider a revision in this section which would recognize a single scale if the cement feeds into a separate compartment of the weigh-hopper and is always weighed first.

The standard specification also provides that water, if measured by weight, shall be weighed on a separate scale. It is provided further that all scales shall be accurate within 1 percent under operating conditions, and that adequate test-weights shall be available for checking accuracy. Many producers do not have such test-weights at hand. Others fail to make frequent inspections of knife edges and working parts of scales as specified, and thereby permit inaccuracies to creep into their batching.

In operating central-plant mixers some producers pay little attention to the relative timing of entry of water and other materials, to the drum and permit the operator to run the water in at will. The standard specification provides that some water shall enter in advance of the cement and aggregates, and that all water shall be in the drum before one-fourth of the mixing time has elapsed. This detail of the timing of the entry of the water will contribute to uniformity of mixing and will assist in minimizing the accumulation of mortar on the inside of the drum.

Probably the requirement of C94 which is most commonly ignored is that of number of revolutions of a truck-mixer. The specification provides that if a truck-mixer is loaded to its rated capacity, the number of drum revolutions at mixing speed shall be not less than 50 nor more than 100. But if the mixer is loaded above the rated capacity (up to ½ cu. yd. over rating is now permitted under the warranty of most manufacturers), then the revolutions at mixing speed shall be not less than 70 nor more than 100. In either case, all revolutions after 100 shall be at agitating speed. This means that if the truck leaves the batching plant with water already added to the batch and the drum turning at 10 r.p.m., then after 10 minutes enroute the drum speed should be reduced to agitating speed, for which the maximum is 6 r.p.m.

If the truck is equipped with an electronic revolution counter with a recorder in the cab, the driver can observe when the drum's revolutions reach 100; at that time, unless there is a drum-speed control in the cab (which is not usual when the drum is driven by a separate engine), the driver presumably must stop the truck, get out of the cab, and slow down the drum engine. As this is seldom done, the truck usually continues to the job with the drum turning faster than agitator speed (maximum of 6 r.p.m.) thereby violating the standard specification.

There are various other operating limitations which are frequently ignored. Thus it is provided that a truck-mixer shall start the mixing operation within 30 minutes after the cement has been intermingled with the aggregates. Also, under normal temperature conditions the discharge of the concrete shall be completed within 1½ hours after the introduction of the water or the mingling of the cement and aggregates; a shorter time may be specified in hot weather or when conditions contribute to an early stiffening. Concrete delivered in temperatures below 40 deg. F. shall arrive at the job having a temperature not less than 60 nor greater than 90 deg. F. Thus heating may be required even though the air temperature at the time of delivery is above freezing.

The above review discusses several of the requirements in producing ready-mix which are set forth in the A.S.T.M. Standard C94, which are frequently ignored by producers. Neither neglect nor lack of understanding of the standard specifications is an alibi for not complying with these requirements. Some are procedural; others refer to characteristics of equipment. If a delivery of ready-mix is represented either verbally or in writing as produced in compliance with C94, and it is subsequently shown that some item was not complied with, then there may be a basis for complaint by the purchaser or job owner, even though no failure in strength or other characteristic has occurred. It appears only prudent for a producer to guard against any non-compliance with the standard specifications.

Concrete Masonry Units, Inc., has sold the controlling interest of its plant at Hamilton, Ohio, to Miami Cement Products, Inc., Seven Mile, Ohio. Although new officers and directors were elected, there will be no change in the management of the plant.

ANDERSEN SAND AND GRAVEL

dual operation features dust control in big new Michigan ready-mix plant

By ROY L. PECK

another ON THE SPOT report

FOR many years Frank Andersen operated a relatively small ready-mixed concrete plant in the built-up section of Saginaw, Mich., as a subsidiary of the Andersen Sand and Gravel Company, his major activity. The plant as situated, was hemmed in on all sides by abutting properties and for the past few years had been unable to keep abreast of the increasing demand for concrete stemming from the construction of many large automotive plants and residences for workers taking place in the Saginaw area.

Last year Mr. Andersen took steps to correct this situation in the purchase of some nine acres of ground, still within the city limits, but free from confining aspects of adjacent property. On this he has built a $500,000 concrete producing plant with a capacity of 150 cu. yd. per hour. The most modern ideas in automatic control of component operations are incorporated throughout the design of the plant, many of these being innovations or improvements on current practices based on the experience gained by Mr. Andersen from his long experience in producing ready-mixed concrete. Not an inconsiderable item in the design was to control the dust—cement and other types—which has in the past commonly been associated with such production. All operating areas in the plant are paved; and an efficient dust collection system in the mixer house helps retain the fresh, clean appearance of the plant after a year of operation.

The sand and gravel deposit from which aggregates are obtained is located at Juniata, near Vassar, Mich., some 30 miles east of Saginaw. Hauling of the materials is by means of six tractor-trailer combinations consisting of two General Motors model 900 trucks, three Mack LJT's and an Autocar unit, all with diesel engines. The trailers are four side-dump and three hopper-bottom units of about 17½-ton capacities. Each truck pulls two trailers to provide a 35-ton payload over the two-hour trip. Because these heavy loads must pass over state highways and city streets enroute to and from the sand-gravel plant, special efforts were made in their design to prevent exceeding load limits. In a typical unit eight axles are used, seven of these carrying dual wheels of large diameter and tire size, the total load thus being safely distributed onto 30 tires without possible damage to pavements. The design of the bodies on these chassis—as well as their fabrications is the work of the Andersen organization, and this is only a part of the ingenious designing seen throughout the plant.

An instance of this ingenuity is the construction of the walls of the various buildings on the property, including a large truck storage and maintenance shop, a warehouse and store building for the Andersen Builders Supply Company (a subsidiary concern), and a strictly modern air-conditioned office building. All these walls were constructed in a horizontal position with the low-slung concrete placed by vibration. When the concrete had attained sufficient strength for handling the units without damage, they were tilted up by crane and set into position on the foundation to form the walls of each structure. Mr. Andersen feels that this use of monolithic concrete is good advertising of his company's business.

Ready-Mixed Concrete Plant

Cement comes to the plant in self-unloading hopper trucks which discharge their contents into the collecting boot of a 10-in. diameter cement screw 65 ft. long which projects outside the bottom portion of one of the two cement silos. A similar cement screw 44 ft. long takes cement from the track hopper when cement is received by car. The two cement screws empty into the boot of a 200-bbl. an hour belt-bucket elevator which lifts the cement 95 ft. to the top of the two cement silos. These have 6-in. thick reinforced concrete walls, are 24 ft. in diameter and 60 ft. high, and contain a total of 12,000 bbl. of cement. The elevator is built between the two silos and has at its top a controlled split spouting arrangement permitting the flow of cement into either of the silos or into any one of the three cement compartments of the overhead storage

Office building of Andersen Sand & Gravel Co., Saginaw, Mich., ready-mixed concrete plant.

Mixing plant, cement silos and elevator. Silos are 24 ft. in diameter by 60 ft. high and hold 12,000 bbl. of cement.

Warehouse and store building of the Andersen Builders Supply Co., a subsidiary concern, built with tilt-up construction.

bin at the top of the mixing plant.

Aggregates are dumped from the hauling units into an underground steel hopper 20 ft. by 20 ft., of 100-ton capacity. The top of this hopper is at grade and is covered by a 6-in.-square steel grid. Flow of materials is by gravity onto the No. 1 conveyor, a Barber-Greene with 24-in. idlers by 140-ft. long with a Goodyear belt moving up at 18 degrees inclination at a speed of 250 f.p.m. The conveyor, driven by a 25-hp. motor located at the head end, has a capacity of 250 t.p.h.

The conveyor at the head end discharges through a hopper feeder onto the cross shuttle conveyor belt No. 2 spanning the storage bins. This Barber-Greene conveyor, 24-in. wide by 100-ft. long moving at 300 f.p.m., is reversible, and can be shuttled back and forth over the bins to discharge into any of the five. It is powered by a 7-hp. motor. It operates on tracks over and along the 200-ft. dimension of the bins.

The material storage bins are built at grade level, each bin separated by a 30-ft. high, 12-in. thick concrete wall, triangular in cross section to fit the repose angle of the materials. Each of the open-sided bins is 100 ft. long, the width of each varying—three are 50 ft. wide, one 40 ft. wide, and one other is 30 ft. wide. The ground area covered by the bins is 100 ft. by 200 ft. Storage of 20,000 cu. yd. of aggregates is afforded.

A concrete reclaiming tunnel, 6 ft. by 6 ft. in cross sections, runs under the 200 ft. storage bins. Each bin has four, five, or six 12- by 18-in. openings into this tunnel for gravity discharge of the bin to the reclaiming conveyor in the tunnel. Each of the 26 openings is fitted with manually-operated clamshell gates. It is planned to equip these gates with air and electric control at some later date.

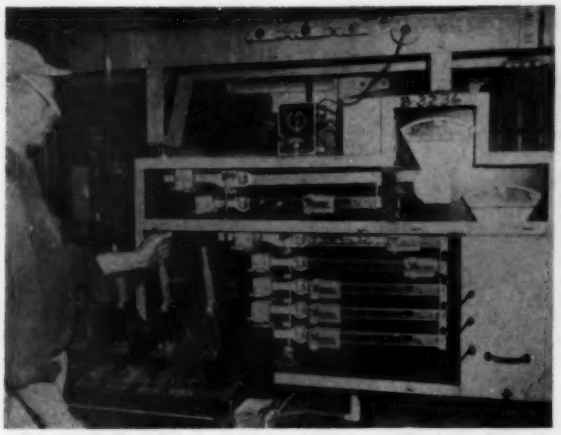
The main belt conveyor No. 3, operating from the reclaiming tunnel to the top of the mixing plant at 250 f.p.m., is a Barber-Greene unit, 24 in. wide by 440 ft. long between pulleys, with a Goodyear belt. It is powered by a 40-hp. motor and lifts all materials up 85 ft. to the distributing spout at its head end. It is planned to enclose this conveyor over its entire length to prevent any loss of dry materials or dusting. Materials can be diverted into a 10-cu. yd. steel bin, located halfway up the rise length of conveyor No. 3, when dry batching of materials into trucks is desired. The batcher, suspended in a steel framework, is equipped with a scale for measurement of aggregates.

A Butler 389-cu. yd. steel aggregate-cement bin is set at the top of the mixing plant. It is divided into five aggregate and three cement compartments, the aggregate compartments being served by a rotary spout turnhead mounted at the top of the main conveyor. A 6-cu. yd. Smith tilting mixer is installed in the plant and the weigh batchers and manual controls on this weighing equipment are by the Butler Bin Company, with certain innovations by the Andersen Company.

As previously stated, the problem of dust elimination in this type of plant called for special effort. Most of the flying dust in a ready-mixed concrete plant is that of cement which has escaped from the batching or mixing equipment units. In this plant a dust collection system, made by the W. W. Sly Manufacturing Company, Cleveland, Ohio, has virtually eliminated cement dust troubles from those sources. Two large suction pipes lead from the dust collector, mounted at one side of the control floor, to (1) the base of the cement weigh batcher and (2) the ends of the mixer. These pipes leading into aprons around the two

No. 1 belt conveyor from underground hopper to shuttle conveyor spanning aggregate storage bins. Mixing plant in rear right.

Another view of aggregate storage bins, showing the 3-ft. high separation walls and cross shuttle conveyor.



Weighing batching control and scales for sand, gravel and cement used at the plant.

Another view in batching room, showing dust collecting system in center and data wheel for various mixes in rear left.

points, where cement usually escapes into the air, prevents any dust problem from developing. About 100 lb. of cement is collected daily. It is indeed unusual to find as clean a plant as Mr. Andersen's.

One handy device noted consisted of a wheel of mixes installed in front of the batching operator's desk. Mounted on ½-in. plywood, it can be rotated to the desired point to indicate the exact weight of any batch of any mixture. Automatic measurement of admixtures or air-entrainment additives relieves the operator of this added work.

Delivery equipment now includes 20 truck mixers, all used as agitators. Seven of these are 5½-yd. LeRoi Transo mixers, hauling 6 yd. as agitators, mounted on G.M.C. 620 chassis, and 13 are 4½ yd. Smith, hauling 5½-yd. as agitators, mounted on International R190 chassis. The former mixers are equipped with power-take-off units utilizing the truck engines to turn the mixer drum in agitating the charge of concrete. After the batching operator has signaled the truck driver that the mixed concrete is in the hopper, the driver discharges the mix into his truck drum through the rear collecting hopper of the truck mixer. So far, no serious cement shortage has been experienced. This has been achieved by filling the cement silos during the winter slack season in order to meet demands during the busy building season.

Adequate provision has been made for accomplishing all repair and maintenance on trucks and other equipment. A building 80 ft. wide by 202 ft. long contains a 60- by 80-ft. shop, a 20- by 80-ft. greasing facility and pit, with the remainder of the area for truck storage. This indoor storage is required during the rigorous winters of Saginaw in order to facilitate ready use of trucks in that season. The machine shop is equipped with the most modern machine tools, Joy air compressor, etc., to make quick repairs. Another building 22- by 60-ft. in size, contains space for a dispatching office, boiler room, and drivers' locker and clean-up room. The control panel of a Western Electric Teletalk intercommunicating system installed in the dispatcher's office, is connected with all points of action throughout the plant.

The office building, 40- by 75-ft. in size, is a one-story structure of poured concrete walls, with a high pylon concrete panel in front carrying the company name. Maximum daylight is provided by large window area in all walls, with modern lighting fixtures within. The entire building is air-conditioned and the interior tastefully decorated in pastel shades. Concrete floors are covered with rubber tile. A rest room contains tables and coffee-making equipment for lunch service for employees.

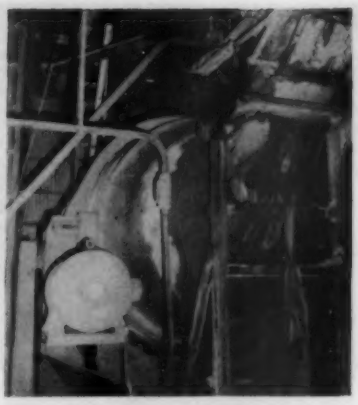
The plant is located on two railroads, the Grand Trunk and the C. and O.; a siding runs from the latter into the plant property. Frank N. Andersen is president of the company, Arthur Lee is sales manager, James Whaley comptroller, Chris Willadsen, batching operator, and

One of the large dual units discharging its load of aggregates into the underground hopper.

Charging one of the 20 truck mixers which the company operates. Note clean condition of driveways and equipment.

Left: General view of yard, with garage and maintenance building in the background, showing ample space for movement of trucks.

Right: Interior of mixer floor, showing 6-yd. tilting mixer and dust collecting piping at top.



Martin O'Brien, gravel plant superintendent.

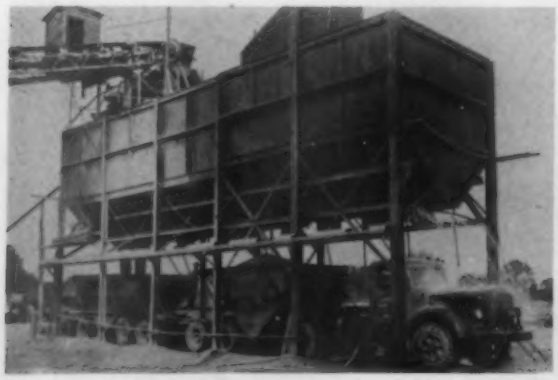
Sand and Gravel Plant

The company has worked the sand and gravel plant located at Juniata, Mich., since 1929, constantly making improvements in the equipment used to produce the five gradations furnished. Practically any specifications can be met by blending these basic sizes. As is seen, a considerable portion of the property has been worked with the hydraulic dredge. This is an all-steel structure 28 ft. in width by 50 ft. long, erected on seven 60-in. by 28-ft. steel pontoons. It has a 65-ft. chain type Diamond cutter, made by the Pettibone Mulliken Corporation and a 10-in. Amsco pump, which is operated along with the cutter by three Caterpillar D-1300 diesel engines connected in series.

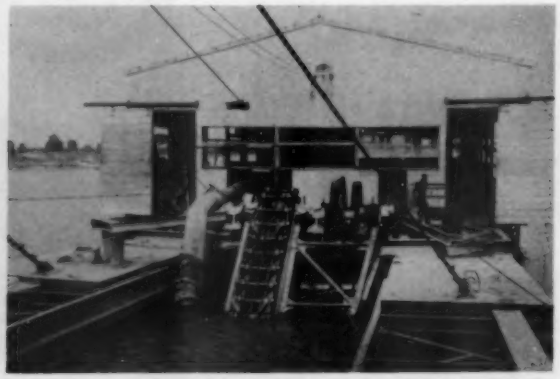
Material is pumped through a pontoon-supported pipeline to a 60-in. by 26-ft. revolving dewatering screen and scrubber having ½-in. perforations. Minus ½-in. material goes to a settling box and is then reclaimed by two 18-ft. Link-Belt Rotoscopes which discharge onto a belt conveyor. Plus ½-in. material discharges onto a 13-ft. picking belt where any objectionable materials are picked off. The material is then discharged, along with the minus ½-in. material, onto a 24-in. by 780-ft. belt conveyor which discharges on a surge pile with a capacity of approximately 12,000 tons.

Under this surge pile there is a 200-ft. long tunnel, having gates spaced every 10 ft. through which materials discharge by gravity feed onto a 24-in. by 380-ft. belt conveyor. The conveyor carries it to the screening plant, discharging it into a 60-in. by 26-ft. revolving screen and scrubber. Material is here sized as follows; minus ⅛-in., plus ⅛-in. minus ½-in. minus 1-in., and plus 1-in. ¼-in., plus ¼-in. minus ½-in., plus minus 1½-in. Oversize material goes

General view of firm's sand and gravel operation illustrating radial storage system utilized.



Truck-loading bins for sand and gravel aggregates. Note spraying of trucks and aggregates to reduce dust and loss of fines in transit.



Front part of Andersen dredge showing cutter ladder and intake pipe at the center.

One of the 35-ton hauling units which does not violate weight limits on roads, as load is distributed on 3 tires of large size.

to a 3-ft. Symons standard cone cone crusher with a 1½-in. setting and is returned in closed circuit to the revolving screen.

Any of the materials from ¼-in. to 1½-in. can be bypassed to a 3-ft. Symons short head cone crusher and crushed material to specification can be made. All material from plus ¼-in. to minus 1½-in. is discharged into bins from the screen over the tunnel, from which it is conveyed to a 4-ft. by 8-ft. rinsing screen and then discharged into the loading bins. The minus ⅛-in. material from the screen goes to an 18-ft. Rotoscope which discharges onto a 24-in. by 110-ft. belt conveyor. This conveyor in turn discharges to a stockpile. Under this stockpile there is a 220-ft. long tunnel having discharge gates every 10 ft. The plus ⅛-in. and the minus ¼-in. material is also discharged into this tunnel. By blending the two materials various sand specifications can be met.

In this tunnel is a 24-in. by 320-ft. belt conveyor on which blending takes place, the discharge of this conveyor going into a truck hopper having a capacity of 600 tons. By use of flop gates on this conveyor, material can be discharged onto a 24-in. by 130-ft. belt conveyor which takes the material to a stockpile of approximately 12,000 tons. This material is usually processed for concrete block manufacture.

A portion of the property is being worked with a LeTourneau Tournapull rear-dump loader, which takes the material from that area—predominantly sand—to a hopper feeding a belt conveyor which takes it to the dewatering screens.

Fischer Lime & Cement Co. Wins N.R.M.C.A. Safety Honors

A preliminary report on the National Ready Mixed Concrete Association's safety contest for 1954-55 lists the following winners:

Class A — firms producing over 100,000 cu. yd.: Fischer Lime and Cement Co., Memphis, Tenn.; Class B—firms producing from 50,000 to 100,000 cu. yd.: Stewart & Nuss, Inc., Fresno, Calif.; Class C—firms producing from 25,000 to 50,000 cu. yd.: Lake Cities Corp., East Chicago, Ind.; and Class D—firms producing less than 25,000 cu. yd.: Central Builders Supply Co., Sunbury, Pa.

Panoramic view of Anderson S. & G. Co. plant at Juniata, Mich. At left, the 60-in by 26-ft. dewatering screen and scrubber.

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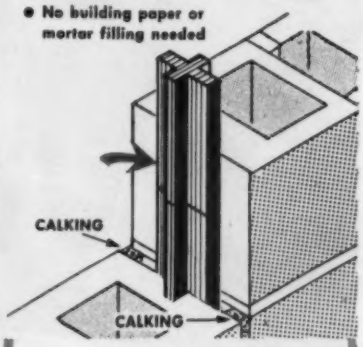

INCREASING DEMAND ASSURES INCREASED VOLUME! More and more the use of control joints is being recommended in erecting masonry walls.

Carter-Waters BLOK-JOINT is a "cross-shaped" rubber extrusion which greatly simplifies the construction of masonry wall control joints. Made of "100 year life" rubber, it forms a secure interlock and adds stability to the wall.

VERSATILE! BLOK - JOINT is easily adapted to various types of wall construction—block walls, brick with block back-up, cavity walls and others.

DEALERS: Write TODAY for information about a profitable BLOK-JOINT dealership in your territory!

WRITE TODAY for FREE sample! Just fill in this coupon—

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2440 Pennway, Kansas City 8, Missouri

Please send me a FREE sample and specifications on the new Carter-Waters BLOK-JOINT.

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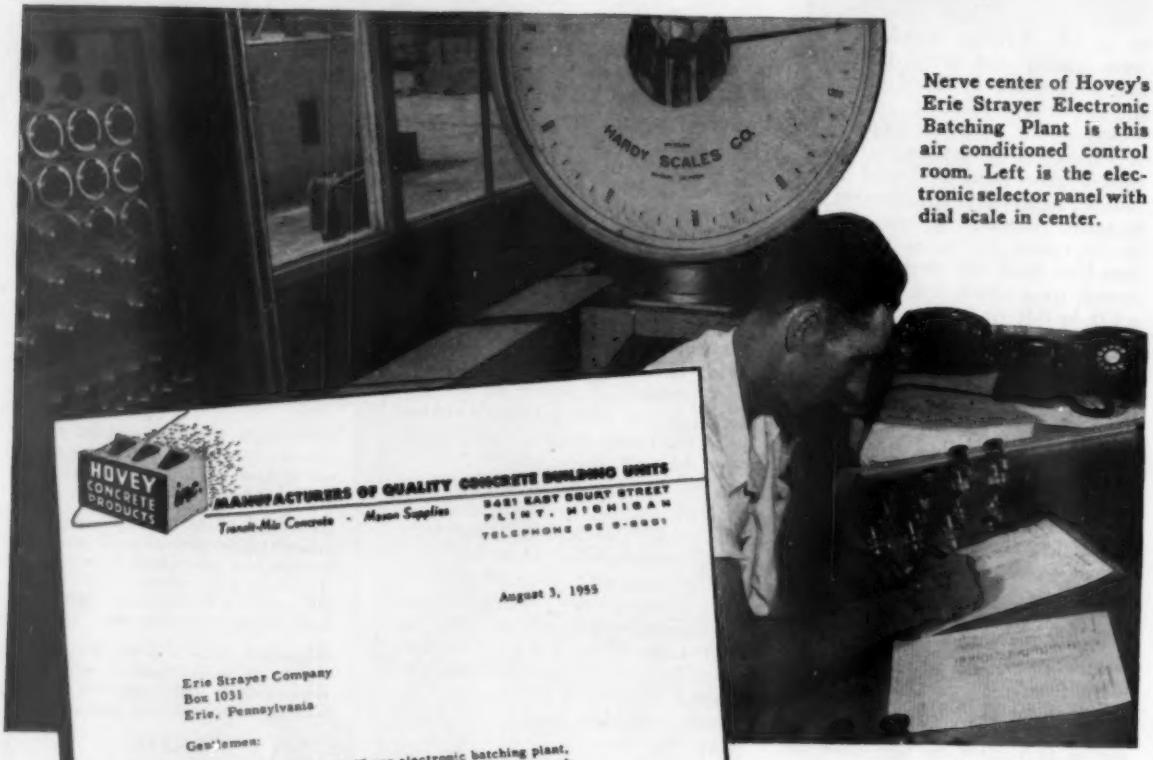
ERIE STRAYER
ELECTRONIC
TRIPLES PRODUCTION AT



Nerve center of Hovey's Erie Strayer Electronic Batching Plant is this air conditioned control room. Left is the electronic selector panel with dial scale in center.

HOVEY CONCRETE PRODUCTS Inc.

MANUFACTURERS OF QUALITY CONCRETE BUILDING UNITS

Transit-Mix Concrete - Mason Supplies

3421 EAST COURT STREET
FLINT, MICHIGAN
TELEPHONE OL 0-9001

August 3, 1955

Erie Strayer Company
Box 1031
Erie, Pennsylvania

Gen'lemen:

Prior to the installation of our electronic batching plant, we were forced to re-handle 86% of our material through stock piles. We had a plant capacity of about 40 yards an hour.

Since the installation of our Erie bins and equipment, we have completely eliminated the re-handling of any of the material and we are now capable of producing 1,000 yards of consistent quality transit-mix concrete per day. We actually do not yet know our hourly capacity, but we have produced 130 yards in an hour's operation without taxing the plant.

We have found that the increased bin capacity, combined with the electronic batching controls, has increased our efficiency and capacity four times and decreased our operating cost to 1/4 of what it was previously.

Very truly yours,

Sherwin Palmer

Sherwin Palmer

SP:ag

Left: Sherwin Palmer, president, Hovey Concrete Products, Inc., tells about his company's experience with Erie Strayer's electronically equipped batching plant.

ERIE

BATCHING PLANT
HOVEY CONCRETE PRODUCTS

FLINT MICH. FIRM NOW ENJOYS THESE COST-CUTTING ADVANTAGES

1. **Output Up from 40 YPH to 130 YPH**
2. **Materials Handling Cost Cut 75%**
3. **It's Still a One-Man Operation**

Hovey, Inc. are volume producers of transit-mix concrete and concrete building units. Their customers demand fast service on specification concrete.

Early this year, Sherwin Palmer, president, bought an Erie Strayer Plant equipped with electronic controls for pre-set batching. At the touch of a button the operator can have any one of 5 different batches. All specifications are well within turnpike tolerances.

Mr. Palmer's letter, left, tells how this new plant has greatly increased production and cut costs.

You, too, can enjoy these important benefits. An Erie Strayer plant with electronic controls gives you complete control over your entire batching day. When your operator reports, he simply sets the controls for the batches he will need that day. From then on he merely pushes buttons. Electronics does the rest.

Electronic selectors can be installed to provide as many different pre-set batches as you need. Five—as in the Hovey plant—or any number to suit your requirement. And always, a flick of the switch puts you on pushbutton operation whenever a single special batch is needed.

General view of Hovey Concrete Products, Inc., Flint, Michigan. Plant was sold by Contractors Machinery Co., Detroit.

What about operating costs? It takes just one man to operate any Erie Strayer Plant—electronic or mechanical. Less current than that used by a 100-watt bulb operates the electronic control system. Maintenance is normally negligible.

And the electronically controlled plant has the same money-saving features that have made Erie mechanical plants famous: Quick, economical erection; Free flow of materials from bins to batchers; Faster batching and discharging cycle; Built to last but with all standard parts for easy replacement.

An Erie Strayer Plant with electronic controls soon pays for itself. Add up all its features, then ask yourself if you can afford not to "Go Erie—Go Electronic"!

For Literature Write Dept. C-115 Cable Address: EXIMPORT
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STRAYER COMPANY

KEYS INDUSTRIES OF ST. PETERSBURG

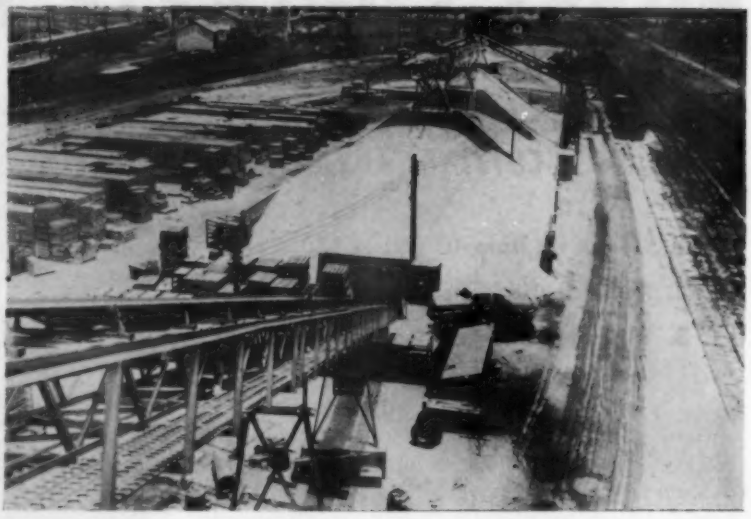
How annual block concrete operation grew in prominence in ten years

IN 1944 Clyde J. Keys, a successful general contractor in St. Petersburg, Fla., built a small concrete producing plant, mainly to supply his own needs in ready-mixed concrete. In the first year of operation the company had sales of some $40,000 in excess of these needs.

In 1950 Mr. Keys started to produce concrete block on a small scale. That was the year that St. Petersburg emerged from its relative quiet—sparked by the construction of the famous Sunshine Skyway bridge across Tampa Bay—and began to grow.

This year Clyde J. Keys Industries expects to sell $2,000,000 worth of concrete blocks, ready-mixed concrete, and building supplies. The full production of three Besser Super Vibrapacs and of a plant turning out 500 cu. yd. of concrete daily is delivered to jobs in over 40 trucks, including more than 20 mixer units with capacities up to 8 cu. yd. Complementing this production and delivery equipment is an array of the most modern storage, handling, and curing units, installed in a composite plant which occupies over ten city blocks along the Atlantic Coast Line railroad.

All materials for both concrete blocks and ready-mixed concrete are received by rail and dumped into under-track hoppers. Cement in bulk goes into a 900-bbl. capacity cement silo *via* cement screw and elevator, while aggregates pass from the hopper on an inclined belt conveyor to a cross shuttle belt conveyor spanning four stockpiles. These are separated by concrete walls and are located over a reclaiming tunnel. A belt conveyor in the tunnel takes materials, as required, to the 400-ton capacity batching bin serving both concrete and block plants.



Aggregate storage and handling equipment at the St. Petersburg, Fla., plant of Clyde J. Keys Industries.

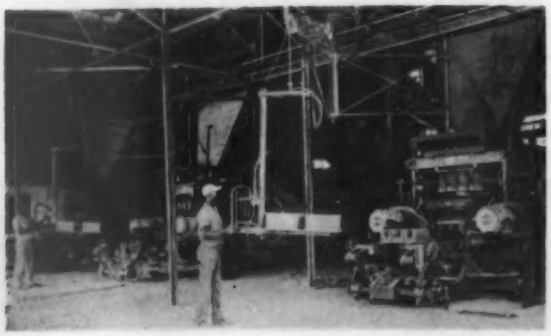
Low-pressure, high-temperature steam curing is used in the block plant, blocks being taken from the machines by lift truck to the kilns for curing. The 16 kilns are equipped with Moore Dry Kiln doors, installed in 1954 to replace those originally used which did not provide the quick-opening, sealed-tight features demanded by the present tempo of the operation. From the kilns the blocks are cubed 4 tiers high by hand and placed in storage by high-lift trucks. The storage yard, having block piles generally 16 tiers high, contains an average stock of over 400,000 units.

According to Mr. Keys, their operation is the largest, both in concrete block and ready-mixed concrete, in Pinellas County, Fla. The degree of mechanization and of automation in control results in a high output of product per employee.

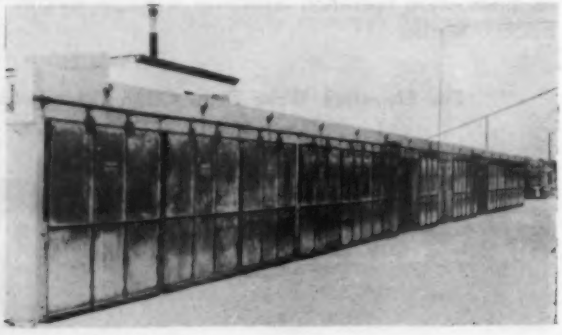
While admittedly successful in attaining high production within a relatively short period of existence, the company feels that future possibilities of expansion will proceed

(*Continued on page* 261.)

Interior of the concrete block plant, showing three machines which have a total production of 30,000 units daily.



A view of the 16 curing kilns, which are equipped with modern quick-opening, tight-sealed doors, and adequate space for movement of lift trucks.



No matter how you judge them . . . for production capacity, quality and variety of block, ease of operation or extreme low cost of maintenance . . . BLOCKMASTER machines by MULTIPACK are the champs on all counts. Seeing is believing, so . . .

LET'S FACE THE FACTS . . .

BLOCKMASTERS feature the simplest and most efficient designs of any modern block machine line. They are fully automatic . . . permit safe one-man operation . . . produce up to 5 cycles per minute . . . handle all aggregates . . . make all types and size of block. In addition, they have fewer moving parts to wear or replace, are hydraulically powered for smooth dependable performance and are produced on an economical "assembly line" basis.

Dollar for dollar, there are none to compare with MULTIPACK BLOCKMASTERS . . . now available in 2, 2½ and 3-block models at realistically low prices.

THE BLOCKMASTER LINE IS YOUR BEST BUY IN BLOCK MACHINES

CHECK THIS PARTIAL LIST OF OUTSTANDING BLOCKMASTER "3" FEATURES . . .

- Two-stage magnetic off-bearer
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- Revolutionary front-end loader design
- Automatic pallet cleaner
- New bottom-drop hopper design
- Separate Power-Pak control console
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. . . THEN WRITE FOR BULLETIN 30 FOR ADDITIONAL DETAILS.

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Successful N.R.M.C.A. Board Sessions Well Attended at Hot Springs

another ON THE SPOT report

THE board of directors of the National Ready Mixed Concrete Association and the National Sand and Gravel Association held their semi-annual meetings September 26 to 28, 1955, at the Homestead, Hot Springs, Va. From a business standpoint, these were among the most important ever held by these groups; they were well attended and many vital matters were discussed. The N.S.G.A. board met Monday, September 26, the N.R.M.C.A. board on Tuesday, and the joint meeting of the two boards was held on Wednesday. The locale was ideal, the Homestead and its extensive facilities providing a wide variety of recreational activities.

In addition to the usual business reports by members of the staff and officers of the Association, these important subjects were discussed: cement shortage and distribution; public relations; stream and air pollution; noise; safety, especially on highways; zoning; merchandising; joint advertising with P.C.A.; coming conventions and the machinery exposition at Chicago; depreciation practices; secondary boycotts; group bargaining; group insurance; minimum wage; and expanded highway programs. Engineering reports covered activities of the Cement Committee; A.S.T.M. specifications for ready-mixed concrete; recommended practices for the industry; flexural strength tests; short courses; fellowships, and sawed joints in pavements.

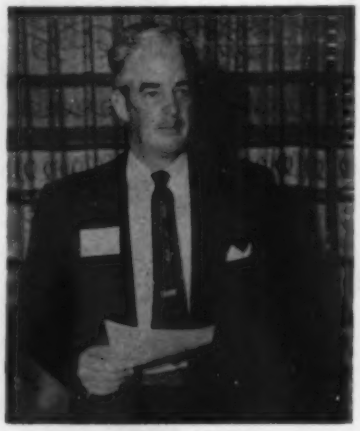
The N.R.M.C.A. board meeting was opened by President Louis C. Schilling (I. E. Schilling Company), who said that the industry is having its biggest year in spite of cement shortages. He added that the Association's membership is at a new high and its financial condition is excellent. Attendance at this meeting was excellent, only one of the 31 directors and two of the 13 past-presidents, who are *ex officio* members of the board, were absent. It was announced that the Association has just finished moving into new and larger offices on the fifth floor of the same building at 1325 E St., N.W., and partly in the adjoining Munsey Building, which is now the official address.

By WALTER E. TRAUFFER

Vincent P. Ahearn, executive secretary of both associations, gave a brief resume of the coming joint convention in Chicago. Sessions will be held at the Conrad Hilton Hotel, but the machinery exposition will be at the Coliseum, a few blocks away. There will be about three times as much space for the exhibits as at the record show of 1954, and all producers are urged to bring their operating men. There will be no registration fee, and registrations will be accepted at either place. Contractors, highway officials, and others interested have been invited to attend. Total attendance is expected to be far in excess of the record 4,800 of 1954 at Chicago.

The convention will open on Monday, February 13, with board meetings of both associations, as well as a comptrollers' conference. Association meetings will be held each of the following three days, except Wednesday afternoon, ending at noon on Thursday. The exhibits will be opened each of the four days at 9 a.m. On Monday they will close at 5 p.m., on Tuesday at 9 p.m., on Wednesday at 6 p.m., and on Thursday at 2 p.m. Those planning to attend are urged to arrive on Sunday if possible.

At the joint meeting of the two boards the dates and places of several future conventions and board meetings were decided upon. The 1956 joint convention, of course, will be at the Conrad Hilton Hotel, Chicago, February 13-16, with the joint equipment exhibit at the Coliseum, a few blocks away. The 1957 joint convention, in line with the Association's established policy of going into the more remote heavy membership areas in intermediate non-exhibit years, will be in Los Angeles for the first time since 1947. The date and hotel have not yet been selected. The 1958 joint convention will, as in 1956, be at the Conrad Hilton in Chicago, and the joint exhibit at the Coliseum. The 1959 convention will go back to New Orleans, which was such a popular selection in 1951. No decision was made on 1960 and 1962, but San Francisco was tentatively approved for 1961.



R. P. McKenrick
Blaw-Knox Company

The 1956 joint meeting of the two boards of directors had tentatively been scheduled for Lake Placid, N. Y., early in October but this was voted down as the weather can be quite cool there at that time. Instead it was decided to investigate the possibilities of Banff, Alberta, late in August. Should this plan not work out, alternative choices were Pebble Beach, Calif., or Asheville, N. C., later in the year. The 1957 location will probably depend on the final 1956 decision and may be either Pebble Beach or Asheville.

This year for the first time it was decided to hold the meetings of the various committees separately from the annual conventions. The Committee Week in Chicago in August was so successful that it was decided to repeat. No date has yet been selected, but the meeting in 1956 will be at the Jefferson Hotel, St. Louis.

In his report, Robert P. McKenrick (Blaw-Knox Equipment Division), chairman of the Manufacturers' Division, stressed the advantages of having an outside equipment show at the coming conventions in Chicago. There is almost three times as much space as formerly. Actually, he said, this expanded space is already 15 percent oversold, and all reservations are not yet in. The space will be fairly distributed and should be adequate. Mr. McKenrick stressed the excellent transportation facilities between the Conrad Hilton Hotel and the Coliseum and the fact that the latter has adequate lunchrooms,

Jaegers will sell more for you, too

Anyone interested in ready mixed concrete should be interested in knowing why more of it is sold in Jaeger truck mixers than by any other method. A few reasons for this strong preference are shown here. Your Jaeger distributor will gladly give you complete information and figures applicable to your plant and type of operation, local conditions, highway load limitations and payload requirement. See him or send, today, for Catalog.

JAEGER MOUNTINGS are designed to take the stresses of off-the-road operation as encountered on this Voit & Sons pour for Madison, Wisconsin housing project. Jaeger drums, too, are built for 8 to 10 years service.

NOTE JAEGER SEALED END LOADER on this Boston Sand & Gravel Co. mixer pouring concrete for Islington, Massachusetts school. This sealed loader is trouble-free; permits hauling full capacity drum loads.

NOTE THE JAEGER OPEN END "MAXI-LOADER" on this Boozer Transit Mix unit working at Tupelo, Mississippi. It is tops in open-end loaders for fast, clean charging and discharging and no spillage on the road.

OPERATORS FOR CONCRETE SUPPLY CO., delivering 2000 cu. yds. for this warehouse floor in Charlotte, North Carolina, made good use of Jaeger finger-tip single lever clutch and brake control. Faster water for mixing, tempering and flushing is also provided by Jaeger's high pressure jet in drum-head.

THE JAEGER "DUAL MIX" drum is without equal for the mixing and fast, clean, controlled discharge of low slump concrete — an advantage on such jobs as this Service Rock Co., Riverside, California curb and gutter pour.

FOR DISCHARGING INTO BUCKET on this U. S. Route 66 cut-off at Guthrie, Oklahoma, operators for Oakes Materials Co. used the Jaeger chute head. To meet conditions, they always have a choice of 5′, 8′, 10′ or 13′ combinations in Jaeger's 3-piece to-the-spot chute — or complete chute swing-away for direct dumping.

THE JAEGER

MACHINE COMPANY

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etc. The machinery exhibits, he said, will be open all day on the first three days of the convention, and during one evening, and until 2 p.m. the fourth day.

Andrew C. Thomas (Jaeger Machine Co.), chairman of the Truck Mixer Manufacturers' Bureau, said that, along with the ready-mix industry, manufacturers of truck mixers and other related equipment are having the biggest year in their history. The bureau is doing well, having acquired four new members recently, for a total of 11. The equipment show at the Coliseum in Chicago will be three times the size of the one two years ago. Mr. Thomas urged all producers to bring their operating personnel.

He added that for the convention the committee will have reports ready on weight laws and adjusting trucks and mixers for higher pay loads. A national weight law will be up before the next Congress.

Public relations came in for a full share of attention at this meeting. Vincent P. Ahearn, executive secretary of both associations, told of the full day meeting of the N.S.G.A. Committee on Public Relations during Committee Week in Chicago in August, and of the discussion of this subject at the meeting of the sand-and-gravel board the day before. He pointed out that a major source of bad feeling against sand-and-gravel producers is the manner in which trucks are operated, and that zoning objections are getting worse. The ready-mix industry is faced with the same problems. The board voted to appoint a public relations committee for N.R.M.C.A.

In the ensuing discussion it developed that in one large city an effort is being made to zone trucks away from main thoroughfares In another trucks are barred from many streets and on others they are limited. In some aeas the "grandfather clause" is of no help; in others, even if permission is obtained to build a plant, the use of access roads is prohibited.

The report on the work of the Merchandising Committee was given by its chairman, Robert C. Collins (Warner Company). He told of a conference on August 15 with officials of the Portland Cement Association on a program for expanding the use of ready-mixed concrete for highways and streets. This group, he said, is always very co-operative, and he pointed to the success of the film, *Quality Ready Mixed Concrete,* which has been widely shown in this country and abroad, and to other promotional aids which have been widely distributed.

Andrew C. Thomas
Jaeger Machine Company

Mr. Collins introduced two P.C.A. officials, Ross Wilcox, highway engineer, and K. D. Piper, vice-president of promotion, to describe the promotional program being laid out It is to be very flexible, so that it can be tailored to fit various local conditions. As the undertaking is a big one, it will take several years to get fully under way, and an early start is important even if all aims are not yet clearly defined. The first step will be a conference of officers and management at which the details of the program will be worked out. Spokane, Wash., St. Paul, Minn., and Akron, Ohio, were selected as trial areas for pilot studies. When the program is well under way in these cities, it will be expanded to other areas.

The program will include the following: (1) compilation of comparative cost and life data with other building materials; (2) distribution of P.C.A. releases on local ready-mix paving jobs to local newspapers from the producer; (3) promotion of public relations by the producers taking part in local civic, safety, and other organizations; (4) special imprinted literature to fit local needs, in addition to the current P.C.A. promotional literature; (5) local advertising; (6) one-minute spot radio announcements supplied by P.C.A.; (7) a possible film on ready-mix street paving; and (8) efforts to insure quality. (Field offices will try to inspect jobs and help control quality.)

The board approved this tentative program as presented, with provisions for future revision to meet conditions.

The matter of unfairness in the cement companies' shipping disproportionate amount of total cement production to government jobs came under discussion. It was pointed out that the Defense Emergency Act still permits priority for work connected with national defense, but it is now seldom used except as a threat to force cement companies to give those in charge what they want. It was voted to make formal representation to the U. S. Department of Commerce asking that priority be used only when it is vitally necessary. In previous efforts the Association had made some progress in persuading cement companies to make their price increases early in the year before the producers had made heavy commitments for their year's production. The board also voted to adopt a statement which members can send to cement companies, emphasizing the cement shortage, pointing out the rights and needs of the ready-mix industry, and protesting price increases on short notice and late in the season.

The members of both boards were given copies of the results of the depreciation surveys for ready-mix and sand-and-gravel plants, showing what member companies are doing. It was voted to send these out to the membership for their own guidance and information. All were warned, however, to change their own practices with great care. It was reported that the Treasury Department is revising its Bulletin F on depreciation practices, and it was voted to have the Association counsel keep in touch with developments. Sand and gravel were included in the old bulletin, but ready-mix was not.

There was some discussion of the drive of the Teamsters Union for requiring employers to assist the Union in secondary boycotts directed against other employers under the heading of "Protection of Rights." It was pointed out that ready-mix producers of only one city have agreed to do this. This is illegal under the Taft-Hartley Act, but the National Labor Relations Board says it is permissible if the employer agrees.

With regard to the effort of the Teamsters Union to require employers to agree to area contracts which supersede individual or group bargaining agreements in these two industries, it was stated that so far no company has agreed to do this. Employers were warned against making any such agreement.

There are current proposals to tighten up provisions of the Taft-Hartley Act dealing with welfare provisions of labor agreements. It was predicted that the Act will not be amended during the next session of Congress. Producers were warned to be sure to take part in the ad-

Prescription Rx for aggregate production

HUBER-WARCO
CINDER GRINDERS

The Huber-Warco No. 9 Grinder has been designed to give big-volume aggregate production, with a substantial savings to the user.

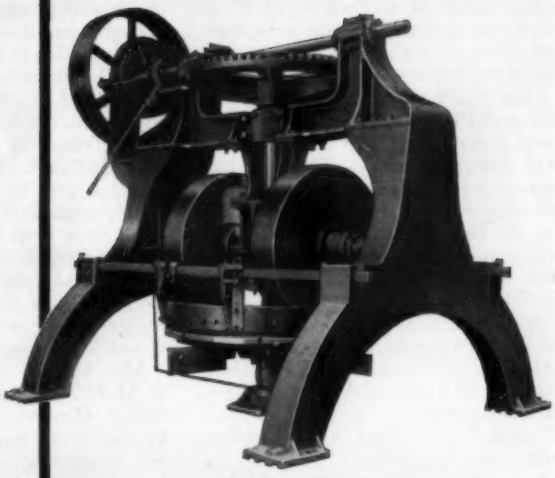
Capacity of this grinder is 30 yards per hour, handling such material as cinders, pumice, haydite, slag and quarry and mine products, with a low power consumption.

The suspended yoke mounted mullers are adjustable to any height, and for finer grinding, the grinding surfaces run together.

The No. 9 Grinder will give years of trouble-free service, with a minimum of maintenance.

Huber-Warco Grinders range in capacity from 4 to 75 yards per hour. Whatever your capacity requirements, there's a Huber-Warco Grinder suited to your type of aggregate.

For a profitable, non-obligating consultation with the Huber-Warco grinding specialist . . . write, wire or phone.



SPECIFICATIONS

(CONDENSED)

- Capacity — 30 yards per hour
- Horsepower required — 25 H. P.
- Speed of 48" clutch pulley — 150 R. P. M.
- Floor space — 12'8" x 11'2"
- Overall height — 10'11"
- Weight — 31,000 pounds

HUBER W WARCO

HUBER-WARCO COMPANY

MARION, OHIO, U. S. A.

Road Machinery

CABLE ADDRESS: HUBARCO

ROAD ROLLERS • MOTOR GRADERS • MAINTAINERS • GRINDERS

Left: Mr. and Mrs. Louis C. Schilling (L. E. Schilling Company) and Mr. and Mrs. James F. McCracken (American Builders Supply Company). Mr. Schilling is N.R.M.C.A. president and Mr. McCracken a past-president.

Right: In this group are Vincent P. Ahearn, N.R.M.C.A. executive secretary; Robert F. Porter (Harry T. Campbell Sons' Corporation); and Herbert G. Jahncke (Jahncke Service, Inc.) The last two are past-presidents.

ministration of welfare funds when they sign a contract with a welfare provision since they are jointly liable with the labor union.

A progress report on the Group Insurance Plan of the two associations was given by William Moore (J. P. O'Connell Company). The plan has continued to grow, and eight new companies have joined since the first of the year. Effective July 1, 1955, the plan was made available without life insurance benefits to members in Oklahoma, Ohio, and Texas, pursuant to recent interpretations by their state insurance commissioners. As a result, the plan is now available, at least to a limited degree, to every active member company in the United States. Since April 1, 1953, the plan has paid $147,217.12 in claims to the employees of participating companies.

This N.R.M.C.A.-N.S.G.A. Group Insurance Plan is only one of numerous benefits resulting from membership in these associations. Full participation by members is also important as it is in competition with insurance plans of labor unions.

There was some discussion of the effect on the two industries of the $1 minimum hourly wage, effective March 1, 1956, applicable to employees of companies subject to the Wage and Hour Law. It is felt that this increased minimum, while it will probably not have any direct effect, will cause an upward swing in the wage spiral, as other higher-paid workers will want to retain the same spread as before.

In giving a report on engineering matters, Stanton Walker, engineering director, first called on Robert C. Collins (Warner Company) to report on the activities of the Cement Committee and on the program of tests and sources of samples. Mr. Collins reviewed what had transpired at an earlier meeting, when it was brought out that there is considerable variation in the strength of concrete due to variations in the quality of cement, even from the same source. At the meeting during Committee Week in August a program was outlined. Every two weeks samples will be taken at the five widely-separated areas where variations have been found to be greatest and these will be compared to a standard sample at the laboratory. This series of tests will be carried on for a year in the hope that some valuable information may result.

Mr. Walker reported that A.S. T. M. C 94, Specifications for Ready Mixed Concrete, which allows for increasing the payload of truck mixers, is meeting with increasing acceptance. Only a few states have not yet approved these specifications. He also mentioned that a revision is being considered which would permit weighing the cement on the same scale as the aggregates.

On the subject of recommended practices for the industry, Mr. Walker said it would be best if the Association wrote its own; but if the American Concrete Institute does this, the Association must participate actively. He mentioned that A.C.I. has a committee on cold weather concreting and plans another on hot weather concreting. (Mr. Walker will serve as chairman of the latter group.)

At the joint meeting of both boards Mr. Walker reported on those matters of interest to both industries. He reviewed the history of the engineering department, which was established by N.S.G.A. in 1928, with limited research facilities. In 1937 the laboratory was moved to the University of Maryland and in 1949 to its present excellent quarters in the engineering building. The Joint Research Committee of the Association was formed in 1949. The men serving on it are well divided between the two industries; in fact, most of them are in both.

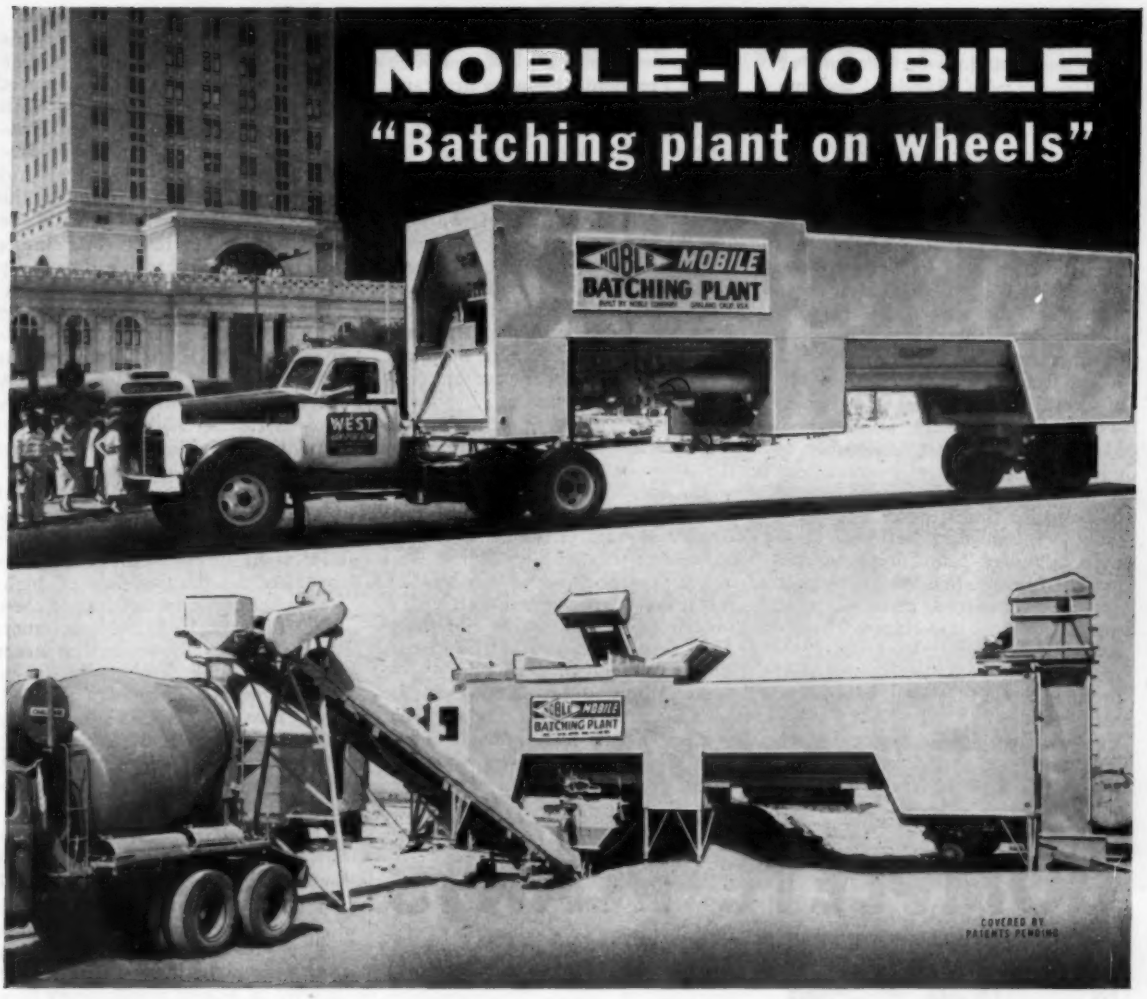
The current and future research program was briefly reviewed. Mr. Walker pointed out that members are kept well informed on work in progress or completed. The research under way on flexural strength is one of the most expensive and time-consuming investigations yet undertaken, and some findings will be reported on in Chicago. He reminded those present that the laboratory facilities are always available to member companies for things they can't get done locally. The research program, he said, is geared to attack special problems of the industry. The Association can also be of help in other ways. It can, for example, assist sand and gravel members in evaluating deposits and products, in selecting of the proper method of beneficiation, soft stone elimination, etc.

There was considerable discussion of short-courses, not only on ready-mix but also one proposed on bituminous concrete. According to Mr. Walker, the ready-mix courses have been very popular and successful; but there are now so many local courses that most members can get this service locally. These local courses are either participated in or advised by members of the engineering staff, and the entire subject is taking too much of their time away from their main objectives. He recommended that the Association's course be limited to one week in November and that it combine both ready-mix and bituminous concrete. The engineering staff, he said, will continue to be available for advice on the local short-courses.

In reporting on the Association

NOBLE-MOBILE

"Batching plant on wheels"



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fellowships, Mr. Walker said that there are provisions for two, one at the University of Maryland and one at Purdue University. He stated that there are no takers for fellowships after this semester. He asked for an increase in the value of these fellowships from $1,500 up to $2,500 annually in order to attract the right type of men. Under these fellowships the student agrees to work for the Association for two years after completion of the agreement. He can then be hired away, preferably by a member producer.

The flexural strength requirements of several governmental departments —600 to 700 lb.—are, according to Mr. Walker, almost impossible to meet. The strength of concrete can be increased by adding more cement to concrete but it soon reaches a point of diminishing returns.

In discussing sawed joints in concrete pavements Mr. Walker pointed out that limestone concrete is so much easier to saw then hard flint gravel that producers of the latter would have to cut the price of their product 25 cents per ton in order to compete.

One of the highlights of the meeting was the report of Ezra C. Knowlton (Utah Sand & Gravel Products Company) on his testimony before the House Public Works Committee on the President's highway program. Mr. Knowlton is highly qualified to represent the associations on such a matter as his wide experience includes many years as chief engineer of the Utah State Highway Department. Through the use of charts it was pointed out that in 1954 Federal Aid represented only 12.2 percent of the total available highway revenue, but that through it the government wielded a profound influence in this field. Even under the proposed expanded programs the federal contribution would be minor.

Mr. Knowlton went on to describe the complicated taxing setup, from the states on down, which pays most of the cost of highway construction. The huge expenditures proposed would, he said, seriously upset the balance of the literally thousands of active taxing and administrating units directly concerned with such a program. This fact was not given proper consideration in the discussions in Congress.

According to Mr. Knowlton, the magnitude of federal highway aid has never been large enough to disturb Federal Treasury or congressional complacency; but the greatly enlarged program proposed was. As a result, Congress for the first time considered it essential to connect proposed federal authorizations with the source of revenue for them. Congress also assumed that the relative size of the proposed Federal Aid would justify its dictating to the states how this money should be spent. This policy reached its climax in the Fallon Bill, which drastically proposed a special heavy-truck tax. This, if carried out, would wreck the work of years by the states in equitably distributing costs among various types of road users. This definitely and for the first time would seriously enmesh federal highway legislation in politics. This bill, he said, deserved defeat.

Mr. Knowlton went on to point out that since 1934 Congress has admonished the states to apply all revenues from special state motor user taxes to the development of highways. Actually, the amount of these funds diverted is, he said, unimportant. Congress, however, has never up to now applied this restriction to itself. The total revenue of the Federal Treasury from these special taxes, said Mr. Knowlton, has always been greatly in excess of federal highway aid authorized by Congress.

He then described the many various forces which are opposing an expanded highway program and which are putting it in jeopardy. In his opinion, it is unlikely that Congress will approve the creation of a separate federal highway financing authority or a large non-treasury bond issue. If definite financing is authorized, it will probably be handled under standard congressional budgetary procedure. There is basis for hope that Congress will finally approve a long-range program for 10 years or more, but it seems unlikely that financial credit will be given for acceptable existing roads, whether toll or free.

It is unthinkable, said Mr. Knowlton, that the added burden of this proposed highway program should be saddled on the federal debt. It would also be far better to increase federal fuel taxes than to permit wholesale extension of toll road development or to impose additional taxes on heavy trucks. He expressed the hope that the 84th Congress will revert to the successful past practice of framing simple authorization bills and leave the problem of raising the money to the Ways and Means Committee and the Senate Finance Committee. He urged that producers do what they can to sway congressional

(*Continued on page* 261)

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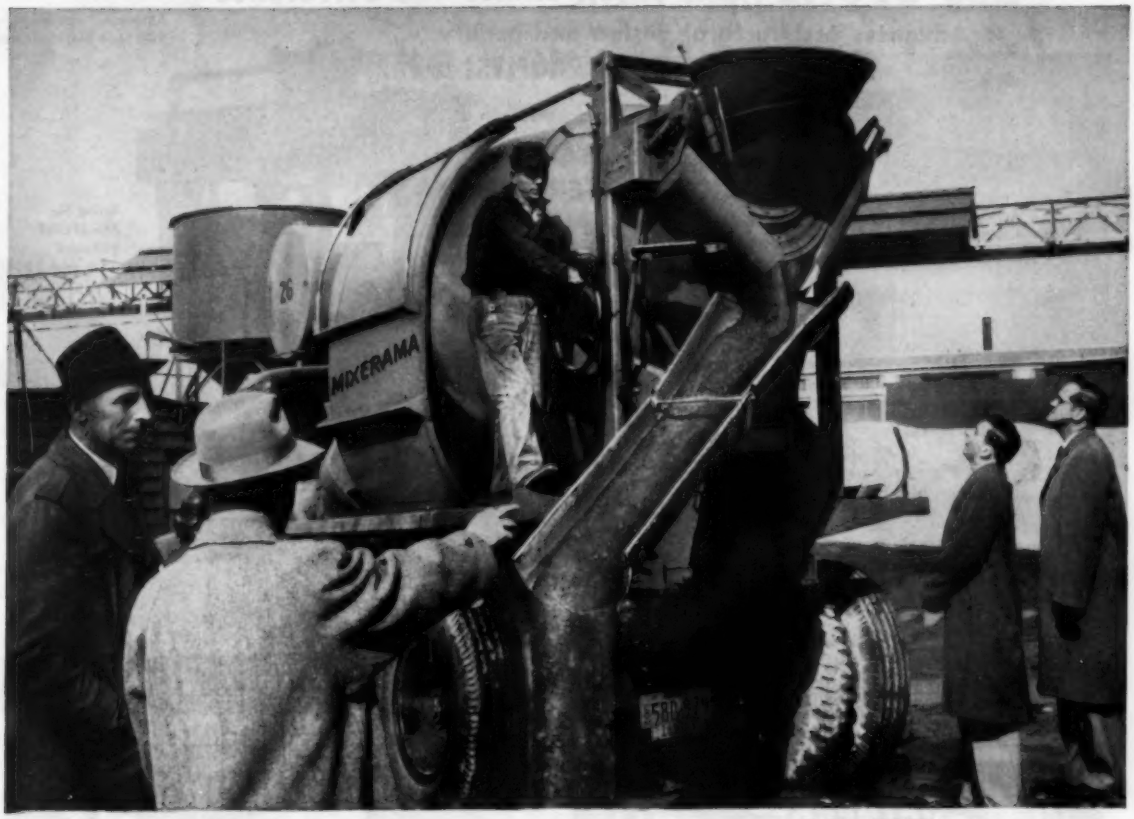

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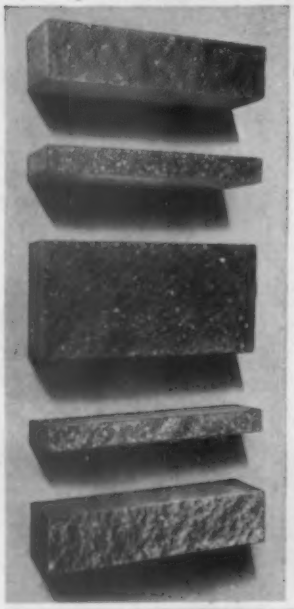

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December: Month of Decision

Make Your 1955 Tax Savings Before the Year-End

By HAROLD J. ASHE

THE 1954 Internal Revenue Code allows a quarry owner, a concrete products manufacturer, or any other individual taxpayer, an additional month of grace in which to file his income tax return. This, however, may prove a dubious blessing, precisely because it pushes further into the future the day of reckoning after the year's end. There is grave danger that a taxpayer will be disposed even less than in the past to think about his impending tax bill in the period immediately prior to the tax year's end.

Yet, from the standpoint of effecting possible tax reductions, the individual income tax return and the facts upon which it will be made demands top priority before December 31. Many of these facts during this period are still in the making and may be shaped to result in tax savings. After the year-end these facts are fixed and, assuming all are reflected in the return, are not subject to change, no matter how compelling the tax need. Purely by chance, a quarry operator or a concrete products manufacturer may have effected tax savings; more likely, however, by failing to analyze his tax problems and tax-saving opportunities before the deadline, he has a larger tax bill than need have been had he been vigilant.

Parenthetically, much of this discussion has equal application to the corporate business—in fact, doubly so because profits are taxed twice, first at the corporate level and again as distributed to the stockholders, including the principal corporate owners and management.

By making a "dry run" income tax return before the end of the year, a quarry operator or manufacturer may be surprised to discover that he has one of several alternatives which will either increase or decrease his tax bill, depending upon how he exercises these choices. However, in equating these alternatives, it cannot be stressed too strongly that a taxpayer must have all of the facts before him to help him make a choice in alternative courses of action. If some of the related facts are missing, or are not taken into consideration, the wrong choices may be made.

Step-by-Step Procedure In making a dry run income taxe return, a taxpayer should exercise the same care he would in preparing a *bona fide* final return. Business earnings are a starting point. These earnings are already largely determined for the year, and a close estimate is possible for the remaining weeks or days. Gross receipts and expenses likely during the remaining period should be projected.

Year-end inventory must be taken into consideration, based on an educated estimate because inventory is a determining factor in arriving at net earnings. Likewise, annual depreciation charges must be taken into account, adjusted to reflect new depreciable assets acquired in 1955 as well as other items dropped from the 1955 depreciation schedule because they were written off in 1954.

Considering the foregoing points, together with any other income and deductible expenses incident to earning such income, a taxpayer can make a close estimate as to what his adjusted gross income will be. He can then decide to which tax bracket the top layer of his income will be subject. This is important because the higher the tax bracket, the greater the incentive to reduce the adjusted gross income and the tax bill *by every legitimate means provided by law.*

One of the little noted ironies of income taxation is that a good many taxpayers indulge in some questionable practices to save on income taxes, while ignoring the *legitimate* devices which would accomplish the same result.

Here are some of the choices with which management is confronted as the tax year draws to a close.

Business Expenses While most expenses are largely fixed, these are not entirely inflexible. There are some items of expense in the operation of a quarry or a concrete products manufacturing plant which management may incur before the year-end 1955 or postpone until 1956, as management elects. If incurred in 1955, these expenses will have the effect of reducing net earnings and, in turn, the corporate or individual taxpayer's income tax, as the case may be. This is not to suggest that additional expenses be incurred solely to reduce the tax bill! However, *if certain expenses will be incurred eventually in any case,* postponement carries an immediate tax penalty in the form of a higher tax bill for 1955.

Maintenance and Repairs A good many repairs and other maintenance needs undoubtedly have been accumulating during the year, and are still not taken care of by December. Through oversight some may carry over into 1956, although sound practice suggests they be taken care of in the year the need for the repairs arises. Certainly such repairs should be made in the year in which a foreseeable tax saving can be made.

New Equipment As with repairs, acquisition of new machinery and equipment may be postponed well into the new year. Here also a tax benefit results more quickly if such machinery, equipment, and rolling stock is acquired before the end of 1955. Assuming that equipment being replaced is already written off—with no depreciation charges remaining—further delay in replacing these capital assets increases the income tax bill. Acquiring replacement equipment early in December, 1955, instead of in March or April, 1956, results in a full year's depreciation in 1956, as well as one month's depreciation in 1955. The same is true of machinery, equipment, and other items not replacing depreciated assets.

Many quarry operators and manufacturers right now are paying income taxes on artificially inflated net

(*Continued on page* 256)

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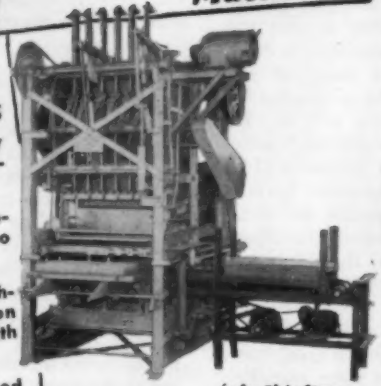

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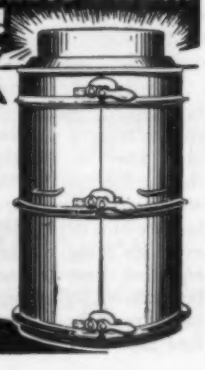

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Recent Changes In Practice In High-Pressure-Steam Curing Systems

By WILLIAM J. SHORE
Engineering Consultant*

THE increasing number of high-pressure-steam curing systems indicates great interest on the part of concrete block makers in producing block of improved quality and also in obtaining a competitive advantage in bidding on important construction projects.

The total number of such installations is extremely small—less than 1 percent of all block plants. There are two reasons for this—the high cost of installation and the present flourishing state of the block business. Every plant can dispose of its production and output at regular prices. It is felt that in due time both these conditions will change. High-pressure-steam curing installations will cost less, and competition due to new block plants will become intensely competitive. It is therefore to be expected that the rate of installation of high-pressure plants will increase, and that eventually high-pressure-steam curing will be standard procedure from every modern block plant.

It is conceded by the block trade that such block are superior, in that they have a more attractive, uniform light coloring, minimum shrinkage and volume change, maximum strength in 24 hours, and lowest moisture content.

In addition to these important advantages, the mix requires a change in cement content, in which 40 to 50 percent of the cement is replaced by a cheaper silica flour, and/or fly ash. This results in lower material costs, varying from one to two cents per block. Roughly speaking, there is a 25 percent saving in block material cost.

Variations in Processes

There are several high-pressure-steam installations in which block are first made in the regular way, molded, cured with low-pressure steam, then removed from kilns and loaded into autoclaves in cubes or masses, to be subjected to high-pressure-steam curing. These are called high-pressure-steam cured block. They have improved color and low moisture.

However, shrinkage in these units is half way between high-temperature and high-pressure cured block. No use is made of fly ash or silica flour, and consequently there is no material saving. The actual cost of such units is higher due to increased handling costs and greater fuel consumption. Identical results could be achieved merely by subjecting the blocks to drying treatment at a far lower equipment cost. A drying installation costs about $1,000 per 1,000 block dried, whereas a high-pressure-steam curing installation costs about $7,000 per 1,000 units dried per day.

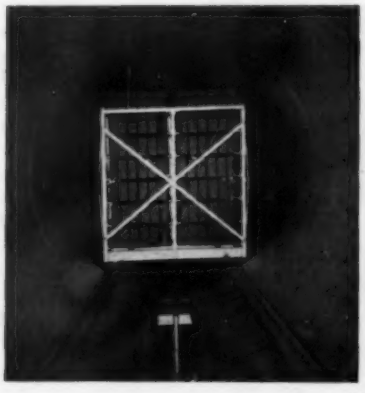
The sight of two or three autoclaves in operation has a psychological effect upon a prospective user. He feels that block so cured must be better than ordinary block; no sane block maker would go to such an expense unless the resultant product were superior. Hence the mere sight of these drums tends to create product acceptance.

Improvements

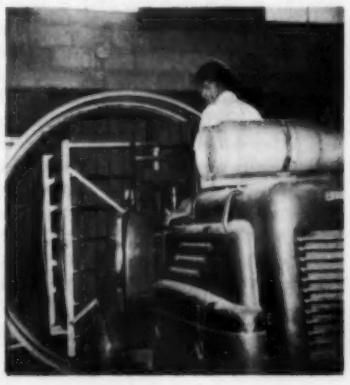
High-pressure-steam curing installations are constantly undergoing changes. Comparison with early installations would reveal several changes. Quick-opening doors are now used in place of those which are sealed or opened by tightening or loosening 48 1½-in. nuts for each door. This operation requires the labor of one man for one hour for each cycle. This time could better be used for steam application. Modern quick-opening doors with their safety features compeltely eliminate the hazards encountered with the older type. Accidents have occurred frequently through the mishandling of bolted door closures. The time saved may be applied on the curing process; there is a possibility for more than two cycles per day.

Through the use of equipment of superior design for exhausting steam, it is now possible to get rid of all steam in an autoclave in 15 to 20

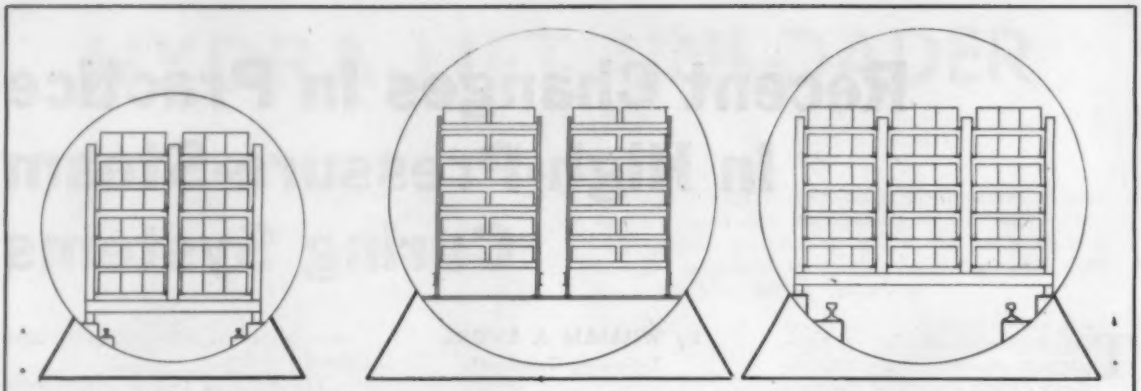
*This paper, originally prepared by Mr. Shore for presentation at the National Cinder Concrete Products Association convention in Atlantic City on August 8, 1955, was read by Harry H. Longenecker in Mr. Shore's absence.



Left: Specially-designed rack developed by B. G. Lange, president, Pre-Cast Concrete Products, Bridgeview, Ill. It is a standard 2-compartment rack with 7 tiers holding 84 8-in. equivalents. The normal output of the autoclave (two cycles per day) is 4,032 units. With the new type of rack, capacity is increased to 4,704 units.



Right: A fork lift with steel-rimmed wheels entering the autoclave at the Lange plant with a standard 2-compartment rack holding 84 8-in. equivalents. Inside diameter of the autoclave is 96 in.; length, 92 ft.



Approximate Installed Costs for Various Types of Autoclaves, Including Steam Generators and All Miscellaneous Accessories

8-ft. Dia. Autoclaves 112 ft. Long

Loading with fork lift truck running on rails in autoclave handling 2-compartment racks holding 72 8-in. equivalents.

No. of Drums	Daily 2 Cyc.	Output 3 Cyc.	Installed Costs
1	5,000	7,500	$45,500
2	10,000	15,000	71,250
3	15,000	22,500	99,000

10-ft. Dia. Autoclaves 98 ft. Long

Loading with lift truck running on platform in autoclave handling 3-compartment racks holding 108 8-in. equivalents.

No. of Drums	Daily 2 Cyc.	Output 3 Cyc.	Installed Costs
1	5,000	7,500	$ 56,000
2	10,000	15,000	90,000
3	15,000	22,500	124,000

10-ft. Dia. Autoclaves 90 ft. Long

Loading with fork lift truck running on rails in autoclave handling 3-compartment racks holding 108 8-in. equivalents.

No. of Drums	Daily 2 Cyc.	Output 3 Cyc.	Installed Costs
1	5,000	7,500	$ 52,500
2	10,000	15,000	83,500
3	15,000	22,500	112,000

minutes, and to do this without undue noise and consequent disturbance to residents in the vicinity. In fact, steam could be expelled, if desired, at such a fast rate that blocks would come out with extremely low moisture content. Such a low moisture content could create a condition in the wall causing the blocks to absorb too much moisture from the mortar, rendering joints unsatisfactory.

Many old autoclaves were built to withstand vacuum, and condenser installations were provided for more quickly ridding autoclaves of steam to achieve greater dryness in blocks. Today, few installations use condensers, since rapid expulsion of steam renders this unnecessary. This method saves from $15,000 to $20,000 for condensing equipment. Some authorities recommend installation of steel bands and rings to give the autoclaves sufficient strength to withstand vacuum stresses. Vacuum would be produced in the autoclave after the steam is turned off, if the steam is not expelled. While such a condition is conceivable, in practice it is never encountered. As a precautionary measure the simple installation of a vacuum breaker at the cost of about $25 would prevent a vacuum and make the installation of rings unnecessary. Omitting rings would cut costs by about $300 per autoclave.

Effects of Corrosion

Some users of high-pressure equipment have encountered serious corrosion in large valve seats and in trap orifices and have had to replace these with stainless steel equipment at a cost approximating $500 per 12-in. valve. This condition results from improper use of equipment and from subjecting costly equipment parts to undue long usage. Corrosion effects, if existent, can easily be minimized by using smaller and cheaper valve equipment replacement, costing between $25 to $50 per unit.

Size of Autoclaves

The design and dimensions of autoclaves have varied greatly. The first autoclaves used for high-pressure curing of block generally were about 6 ft. in diameter, with lengths up to 70 ft. Later, this first dimension was increased to 8 ft. to accommodate standard 2-compartment racks holding 72 blocks, each placed across the drum. Then, because some block makers used the 3-compartment 108-block racks, autoclaves were made 10 ft. in diameter. Recently, two installations were made with a drum length of 106 ft., or 112 ft. from end to end.

The first 10-ft.-diameter autoclaves were used for placing 108-block racks crosswise in the drum. Several later installations of the same diameter had platforms installed on which racks could be delivered by platform trucks and set lengthwise in two rows, using any type of rack. It was felt that the labor saved through use of lift trucks would be sufficient to offset the higher costs of fuel required for heating purposes. This possibility has not yet been definitely proved.

Capacities of Autoclaves

The early type of autoclaves held between 1,000 and 1,500 blocks. The latest types hold 2,500 blocks each, and some now on order have a capacity of nearly 3,000 blocks. The limiting size appears to be 10 ft. in diameter and 100 ft. in length, due mainly to the inability of railroads to transport larger drums than this size. To offset this limitation, rack design is being improved to accommodate more blocks and at the same time to avoid outlandish contraptions that create difficulties in placing blocks on racks and in removing them.

As an illustration, we refer to a recent installation of two 8- by 92-ft. autoclaves installed at the Bridgeville, Ill., plant of the Pre-Cast Concrete Products, Inc. Ben G. Lange, president of this company, designed his racks to take seven tiers of blocks instead of the usual six tiers. Thus the autoclaves, which had a normal capacity with 6-tier racks of 2,016 blocks, could hold 2,352 blocks with 7-tier racks. Daily curing capacity was increased from 8,064 blocks to a normal of 9,408 blocks on 2-cycle operation. The overall dimensions of these racks are no greater than those of ordinary racks. They are built more sturdily, but they do not complicate the loading or unloading of block as do some types of contour racks.

Quick-Opening Doors

The older type of quick-opening door usually was suspended from a short shaft and bearing upon which it revolved. This design is no longer in common use mainly because the larger 8- by 10-ft. diameters required made it difficult to support such a heavy door from one bearing and to keep it in alignment. Two types now prevalent are the ring-lock and the wedge-lock doors.

In one type of ring-lock door a loose ring is inserted in a groove in the autoclave door framing, while in another the ring is held on the door proper. Contracting the first ring makes it engage a groove in the door, and expanding the ring in the second case makes it engage in a groove in the autoclave frame. Experience has shown that the recessed groove in the door frame sometimes becomes clogged with loose debris falling into it from trucks. If it were covered by a piece of sheet metal covering, this trouble would not occur.

In the wedge-lock door a series of lugs around the door circumference engages a corresponding series of lugs on a rotating door ring. Turning the ring creates a wedging action which holds the door tightly closed. This type is made in two varieties, one using a lip-type gasket, such as is used with the ring-lock doors, and the other a solid asbestos gasket. The wedge-lock door is about 15 percent more costly than the ring-lock door. When a straight asbestos gasket is used in the wedge-lock door, the installation is 10 percent more costly than when the lip-type gasket is used. But a door of this design eliminates frequent replacement of gaskets. Merely as a matter of interest, ply on door costs:

Ring-locking door with lip gasket	$1,000 per ft. diameter
Wedge-lock door with lip gasket	1,100 per ft. diameter
Wedge-lock with solid asbestos gasket	1,250 per ft. diameter

Provisions for Autoclave Expansion

In the old autoclaves, provision for expansion was poor and inadequate. Minimum areas of steel footings were usually supplied, placing great weight on each footing. Sliding elements were made of ordinary hot-rolled plate riding on hot-rolled plate. Naturally, friction was excessive, in fact, so much so, that concrete foundations were often pushed out of place. In one instance, where the foundation was solidly installed, the drum started to buckle. To overcome this fault, the use of special low-friction alloy plates, with grooves in the under side, was recommended, to allow for the distribution of grease; thereafter the drum could slide easily.

It is felt that the best design should require nine steel footings, each riding on a series of hard-surface steel rollers, with all of the rollers contained in a structure to keep them in line. Experience has proved that this arrangement eliminates any difficulty or undue stress on the concrete foundation piers.

Steam Generators

During the last 25 years great changes have been made in steam boiler design. The various components of a boiler installation have now been combined into one complete self-contained assembly. The old-type foundation is gone, the boiler itself, the smoke stack, the combustion chamber, the oil or gas firing equipment, various types of automatic controls, and forced- or induced-draft system, are now all mounted on a fabricated frame which allows the entire unit to be moved from place to place as desired, with very little loss of time and at little expense.

Boilers of this type are standard up to and including 500 boiler hp. Where greater amounts of power are needed, two units may be installed, or a water-tube type of boiler may be used. The water-tube type requires more skilled attendance and demands careful and thorough attention to water treatment. Failing this, tubes become clogged with a hard scale and ultimately will require replacement. Overall efficiency of the two types of boilers are about equal. The "package" fire-tube boiler is approximately 10 percent lower in cost than the water-tube type.

Boiler Attendance

The older boiler required a fireman to fire coal, rake the fire, remove the ashes, replace water, and adjust the draft control. The new boilers, using liquid or gas fuel, are all automatic and require no attendance. Because of the many accidents which occurred when boilers were not attended properly, laws were enacted which required the employment of competent attendants on all high-pressure boilers.

Today, any block plant employee who has attended low-pressure boilers for any period of time is competent to attend any high-pressure boiler. He may obtain a license to do such work by preesnting himself before an examining board and answering questions asked to determine his knowledge of the work to be done. It is not necessary to hire additional fire help; in fact, on all modern boilers there is little for any attendant to do other than to keep the boiler equipment clean and free of dirt.

Installation Cost of High-Pressure Systems

The complete installed cost of a high-pressure-steam curing system varies as follows:

Production of 5,000 8-in. units per 24 hr.	$ 45,000
Production of 15,000 8-in. units per 24 hr.	$100,000

Cost per 1,000 blocks per day varies from $6,666 to $9,000. This includes autoclaves; quick-opening doors; a gas-fired steam generator with pump and tank, silencer, heat exchanger, exhaust blower and duct; all piping, valves, and complete engineering services covering the entire installation, and starting the operation.

Deferred Payments for Installations

Assuming a block production of 15,000 standard 8-in. units per 24 hours, using three 8- by 112-ft. autoclaves, and one 400-hp. steam generator, the total cost would be $100,000, of which, $80,000 would cover equipment and $20,000 the cost of installation. Term payments for a period of 42 months would add financing charges and would make each payment $2,286 per month. After 12 monthly payments, savings in cement cost begin to offset these payments. Assuming a saving of 1 cent per block, 200,000 blocks per month show a saving of $3,000 per month or slightly more than $700 over the payments. The $20,000 installation cost is paid direct by the customer to various trades making the installation. It is also possible that arrangements may be made with these trades for extended payments.

Conclusions

There is every reason to believe that installation costs for high-pressure-steam curing systems will be reduced eventually. This reduction will come mainly from economies in various operations such as loading, unloading, opening and shutting doors, exhausting steam, and cooling of blocks before removal. Reducing these items to the minimum will permit the same amount of steaming as

now takes place, and will perhaps permit operations of more than two cycles per day.

Assuming the possibility of satisfactory performance of three cycles per 24 hours, an operation which was formerly a 15,000-block-capacity curing system will now become a 22,500-block system at no increase in cost. Thus the cost of an installation will be decreased by 33 percent merely by making more intensive and complete use of equipment at hand. That is one way of lowering the cost of installation. Another effective assist is in the use of racks of greater capacity, as Mr. Lange has done in his installation. By use of 7-tier racks he increased loading per autoclave by 1/6 and reduced the installation cost by 1/7.

An arrangement for purchasing high-pressure-steam curing systems on a deferred payment plan makes it more readily available to certain block plant owners. The installation of high-pressure curing systems should be allowed to proceed at a normal and conservative rate. It should not be "high pressured". When and if such a system justifies its extraordinary installation costs in any area, consumer acceptance will take over, and its installation will become a matter-of-fact, ordinary procedure. High-pressure-steam curing will then be of benefit to the entire block industry by providing a superior product at a lower cost.

1955 Tax Savings

(*From page* 251)

earnings, thanks to their failure to replace fully depreciated equipment. Consider how this works. A non-corporate concrete products manufacturer in 1954 had equipment being depreciated at the rate of $5,000 a year. However, in 1955 $2,000 of this depreciation charge was lost, his 1955 depreciation being only $3,000. His net earnings are $2,000 higher than if depreciated assets had been replaced by new equipment for an annual write-off of $2,000. If this manufacturer is in the 34 percent tax bracket, failure to replace these assets results in a tax increase of $680.

Bad Debt Losses Both business and non-business bad debts may be deducted in determining the income tax. Before year-end a taxpayer should make a final effort to effect collection as a step in establishing that certain of these debts are uncollectible. The reason: bad debts may be deducted only in the year in which it is determined that they are uncollectible. In this connection, it should be noted that court action is not necessary if it can be shown that such proceedings would be futile.

Capital gains and losses If a taxpayer has taken a capital gain during 1955, he may be wise to take an offsetting capital loss, provided that the loss appears inevitable and cannot be recouped by holding the asset.

Reporting Deductions vs Standard Deduction After the year-end it is only a matter of arithmetic to determine whether to itemize and report personal deductions or to take the standard deduction. Before the year-end, however, it may be possible to increase the sum total of these deductions so that itemizing will mean a tax saving.

Example: A non-corporate manufacturer has $15,000 net earnings from his concrete products plant and other income sources. He is entitled to the maximum standard deduction of $1,000. Itemized deductible outlays total only $950. Obviously, the standard deduction is more advantageous.

However, he considers how to increase his deductions to total more than the standard deduction. His itemized deductions include medical-dental expenses *above the amount which the regulations require he exclude;* so a physician's bill of $100 is fully deductible. He pays it before year-end. His wife has some dental work done amounting to $100, and he pays for it before the year-end. He pays a property tax on his home amounting to $150, although the property tax penalty would not attach before 1956. Finally, he honors a $50 charity pledge before the year-end. He now has additional itemized deductions of $400 which, with the $950, exceed the standard deduction by $350. With four exemptions, in filing a joint return he is in the 26 percent tax bracket. His tax saving is $91, yet he has not expended a dime to which he was not already committed in any event.

Conversely, another manufacturer calculates he cannot exceed his standard deduction. He postpones paying bills of a deductible nature until after the year-end, and fails to acquire others. By so doing, he hopes that these items, together with others accumulated during 1956, will total more than that year's available standard deduction. This is known as "bunching" deductions in one of two successive years. *The year of deductibility is the year the outlay is actually made.* Even if, in the ensuing year, itemized deductions do not exceed the standard deduction, nothing has been lost, and the taxpayer is exercising his right to take the standard deduction. He appreciates that, due to personal circumstances and misfortunes, personal deductions may fluctuate sharply from one year to another.

Time Element Important A taxpayer may ask: "What difference does it make which of two successive years an optional business expense is reflected in an income tax return, assuming such an expense may be incurred in either year? If an income tax is reduced one year by such an expense, does not its absence the next year increase that year's tax by a like amount?"

It isn't as simple as that. The net earnings and tax bill for the year ending is established, unless alternatives are exercised. The upcoming year is one of many uncertainties and unknown factors. Earnings may drop sharply. If so, personal exemptions and deductions may be sufficient to result in no tax. Thus, additional expenses in such a year have no tax saving result.

An aging taxpayer sells his business early in the upcoming year, business earnings being negligible; or he may take an extended vacation before again engaging in business, a period during which he lives largely on his capital.

A serious illness may sharply reduce business earnings. Likewise, an untimely death may end business earnings early in the year and there may be added business expenses having no tax "value".

Therefore, other things being equal, a possible tax saving should be realized as soon as it is made available, and whenever a tax obligation is known to exist which such an expense can reduce.

While the preparing of a trial income tax return may involve considerable time on the part of a taxpayer, it can be most rewarding. In all likelihood the time so spent will net a higher *per diem* return than he can make for a like amount of time devoted to other business activities. At least this has been the observation of this writer in the case of innumerable taxpayers. Moreover, money earned through tax saving is tax free. This is one case where $100 saved is $125 to $150 or $175 earned.

Besser Cuts Travel Time For Staff and Customers With Beechcraft Executive

To keep pace with the accelerated traffic of this air-minded age, the Besser Company of Alpena, Mich., recently purchased a Beechcraft Super 18 Executive transport plane. The twin-engine, five-passenger craft will be used to save time for customers and company staff members in traveling among the firm's plants. It will also provide top-speed transportation for Besser personnel in emergencies.

Powered by two 450-hp. Wasp engines, the Beechcraft has a cruising speed of 215 m.p.h. and a top speed of 234 m.p.h. The cruising range (non-stop) is 1,455 miles, with a 45-minute reserve. Since the plane can take off and land on a 1,700-1,800-ft. strip, it will be extremely useful for small field operation. An automatically controlled ventilating and heating system provides fresh cool or warm air, as desired, and changes the air in the cabin every two minutes. Maximum use of cabin space affords passenger "walk-around" comfort.

The plane will be operated out of Collins airport, six miles west of Alpena and will be housed in a specially constructed concrete block hangar.

Besser's Beechcraft Super 18 Executive transport is saving many valuable hours for the company and its visitors and customers.

Besser Company officials secured the services of two well-qualified pilots to operate the Beechcraft. Both men are veteran fliers who served in World War II and who hold commercial pilot licenses with ratings in single- and multiple-engine aircraft. The pilot is Captain Charles Seelye, who formerly operated the St. Marys (Pa.) Municipal Airport and also flew executive aircraft. Co-pilot Cleo Briley was a captain in the 10th U. S. Air Force and saw service in the Burma-India theatre, flying B-24 and B-25 bombers and fighter and rescue planes. Each pilot has accumulated over 4,000 hours' flying time.

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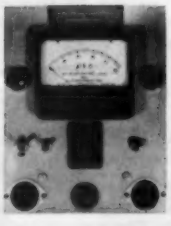

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How Safe is Your Plant?

Ten steps to be followed by concrete producers in setting up a safety program

AN average frequency rate of 44 lost-time injuries for every 1,000,000 man-hours worked in concrete block plants is almost six times the figure of 7.44 reported by the National Safety Council as the rate for all industry in 1954. Conservatively converted it is a waste of 1.5 percent of the labor time of the entire industry. Add to this direct cost the other direct costs of lost time on machines, lost production, new man training, etc., and you arrive at but one inevitable conclusion: something must be done to correct this situation.

The National Concrete Masonry Association's accident prevention program is directed toward this problem. In a bulletin recently compiled by the Association, steps were outlined which might lead to the establishment of a safety program in a concrete block plant. We feel that a brief recital of these points might prove helpful to management in considering the economic loss involved, and also the more intangible aspect of better human relations.

1. *Safety must start at the top.* It must be company policy to take every reasonable precaution to reduce plant accidents, and top management must exhibit active interest to convince the entire working force of its sincerity in getting the best safety program.

2. *One man must be responsible for the program.* Depending upon the size of the plant, this person may be the owner, the manager, the superintendent, the foreman, or the maintenance man. In any case, he must be cloaked with a degree of authority, and endowed with a sense of observation above the average if he is to function properly.

3. *A meeting of all supervisory personnel must be held.* In this session the objectives and general plan of the safety program must be outlined to the key men, one of whom presumably will be the safety supervisor. The attitude of management in backing up the safety program must be emphasized. By reference to past accident reports it can be shown that practically all accidents are preventable. The benefits of safety work should be discussed.

4. *A complete inspection of the plant must be made* by the manager and/or the safety man. Items such as the following should be checked:

(a) General housekeeping—Tools, machine parts, etc., should be stored in their proper places and not scattered around. All operating areas should be free of debris and hazardous obstructions. Floors should be kept dry, clean, and free from grease or slippery spots.

(b) Power transmission hazards—Exposed gears, belts, pulleys, etc., with which anyone may come in contact should be properly guarded.

(c) Fire hazards—Look for oily rags, waste paper, and inflammable liquids which are improperly stored. Fire extinguishers should be kept handy and in repair.

(d) Machine hazards—Check over the block machine, mixer, and other major equipment for possible hazards during operation and cleaning, and, wherever possible, minimize such hazards by mechanical means and safe practice rules.

(e) Electrical hazards—Open switches, defective wiring, burned-out lights, etc., should be guarded and replaced as necessary.

(f) Material-handling hazards—Conveyor belts, bucket elevators, and other equipment for moving raw materials should be protected with covers. Lift trucks should be frequently checked for their mechanical condition (as to brakes, horn, etc.) and their operation should be covered by safe practice rules. Toxic exhaust fumes should be eliminated.

(g) Visibility hazards—All working areas should have sufficient lighting. Danger points should be brightly painted. Steps and railings should be in good repair. Steam exhaust should not be allowed to escape in the plant.

(h) Yard hazards—Storage yard should be smooth for safe lift truck operation, and open pits and railroad crossings should be properly guarded. Special safety rules may be necessary in the high stacking of cubes.

(i) Personal equipment—Safety goggles, gloves, safety shoes, etc., should be provided and/or their wearing should be required for certain jobs.

5. *At each point in the plant ask the question "Can an accident happen here?"* Special signs or rules should apply to those points having a potential hazard.

6. *Secure the active co-operation of the workers.* Most accidents result either from an unsafe condition or an unsafe practice. If the company will be responsible for eliminating unsafe conditions, the workers may be expected to do everything in their power to perform their work safely.

7. *Periodic safety meetings should be held.* These should be informal in character, and the employees should be encouraged to participate in discussions. Without the co-operation of the workers, the program will fail.

8. *A set of safety rules should be written.* These should be posted in work areas, locker rooms, and at other conspicuous places. Rules should emphasize the proper method of performing a job, rather than point out the wrong way too late. Rules should be stated positively. Eliminate the word "Don't" from rule phraseology.

9. *Keep the program alive with new material and ideas.* The insurance representatives will prove helpful in this matter, as they are interested in promoting plant safety and constitute a source of valuable accumulated information.

10. *Initiate safety contests with rewards for accident-free periods.* All members of the N.C.M.A. are eligible to enter the association's annual safety contest. If the workers feel that they are entered in a national contest, interest is increased. It is well to remember that the cost of safety prizes to employees in a safety-minded organization will never equal payments of higher insurance premiums in a plant where safety is a secondary consideration.

Recent expansion of the Ready Mix Concrete Company, Lawrence, Kans., owned by M. N. Penny, has resulted in an increase of over 30 cu. yd. of concrete per hour over the former 50 to 55 cu. yd. capacity. There is a storage capacity of 18 carloads of aggregate, sand, and cement at the new mixing plant. An unusual feature is the utilization of an old Santa Fe water tower as the storage hopper.

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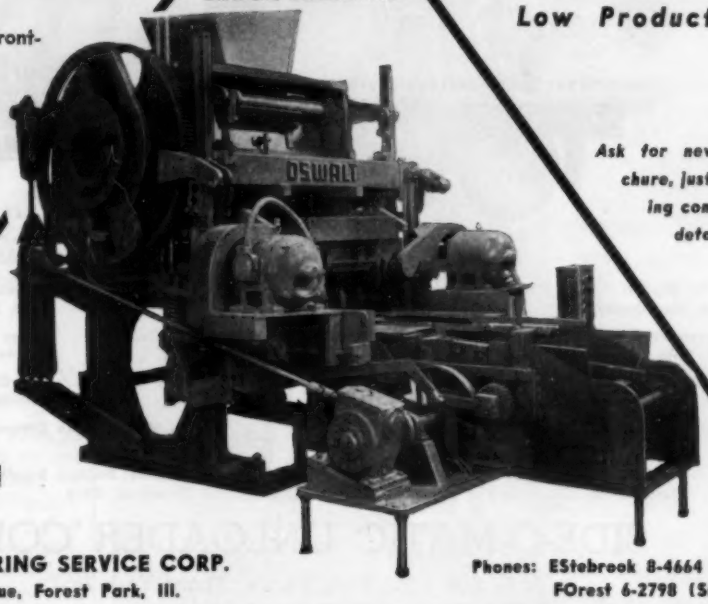

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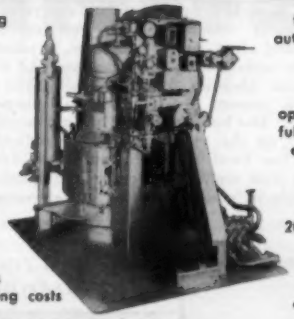

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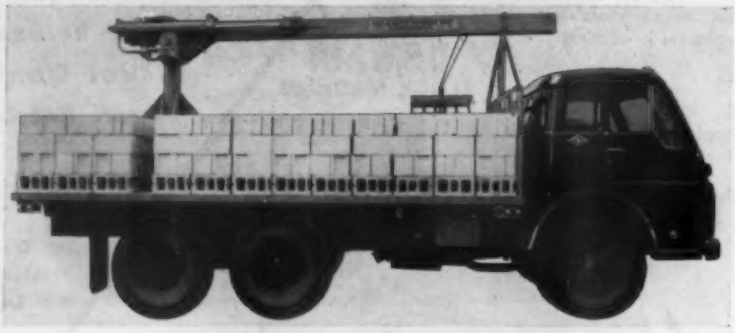

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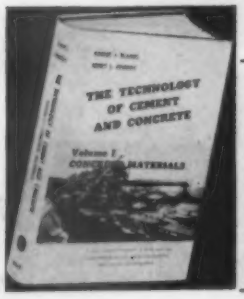

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Keys Industries

(*Continued from page* 240)

apace with the coming growth of the St. Petersburg area. For at least three reasons, future business prospects are very favorable—(1) relatively large military installations are going into nearby MacDill and Drew Air Force bases; (2) extension of basic training centers are contemplated by the Air Force; and (3) there is a growing number of people wishing to go to the area to retire.

Officials of the company include Clyde J. Keys, owner and general manager; Clyde J. Keys Jr., manager, ready-mixed concrete; Glen L. Keys, manager, concrete blocks; Mal Ogden, sales manager; and Robert Fox, production supervisor.

N.R.M.C.A. Board

(*Continued from page* 248)

thinking in that direction.

The board also voted to have its staff do everything possible to get the conflicting factions in Congress reconciled. The approved policy statement urged the passage of a stepped-up Federal Aid highway program both for the interstate and federal primary and secondary systems, about in the dimensions of the Fallon Bill (H7474) but within the following framework:

(1) That it be financed by the Federal Treasury under congressional budgetary control;

(2) That federal taxes on motor fuels be increased 50 percent;

(3) That the Federal Government share on the interstate system be 90 percent and that of the states 10 percent, with credit to the public land states—and that these federal funds be apportioned among the states on the basis of need;

(4) That for the other systems, the historical formulae as to apportionment and matching be retained;

(5) That the authorization bill include no restrictive provisions which encroach upon state sovereignty nor any provision whatsoever for financing; and

(6) That the standing committees of the House and Senate forge out the detailed financial plan with a separate bill.

H. E. Weyland, Nutley, N.J., has been appointed a representative for Edick Laboratories, Milwaukee, Wis., for this firm's territory in Pennsylvania, New York, and New Jersey. Edick manufactures chemicals and electronic equipment for the concrete industry.

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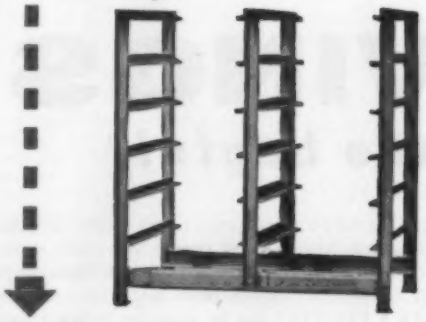

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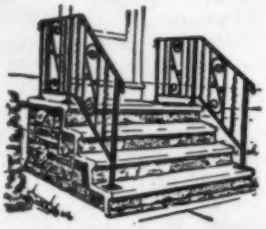


PRE-CAST STEPS AND PORCHES IN STONE OR BRICK

Licensor: SHAWNEE STEP FORM CO.
BOX 995 TROY, N.Y.

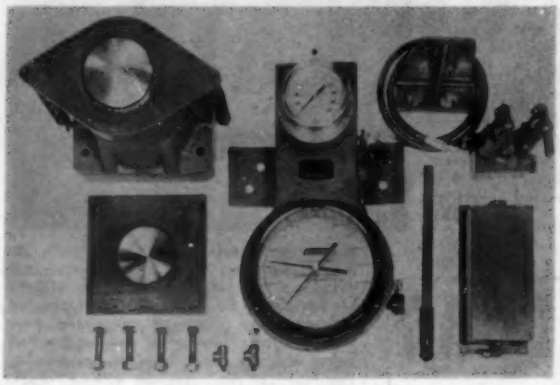
For Fast Results . . .

ADVERTISE YOUR
USED EQUIPMENT

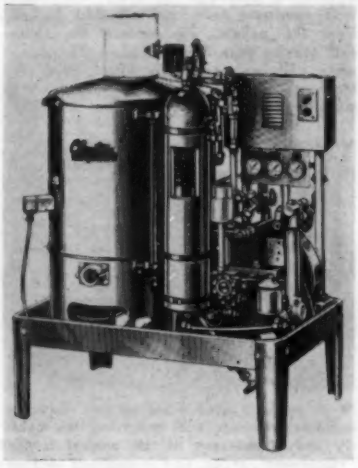
THE CONCRETE MANUFACTURER'S
CLASSIFIED SECTION

"The Marketplace of the Industry"

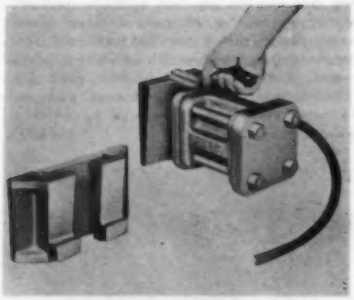
CM New Machinery and Supplies



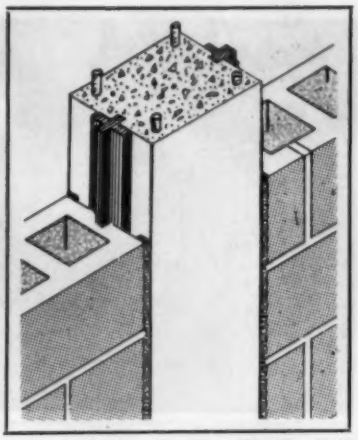
● Designed primarily for use on pipe testing frames, the new Forney 125-ton hydraulic package unit is complete in all details. The 12-in. diameter work gauge is easy to read and is equipped with a traveller hand. The ram is 6 in. in diameter with a 5-in. stroke. It has a spherical end which rests in the spherically-seated contact plate for easy and perfect alignment. ← (101)



● Balanced feed has been incorporated in the new 15-hp. forced recirculation steam generator manufactured by the Clayton Mfg. Co. Thus cold air is never admitted directly to the coils, where it would reduce the head level of the entire system and induce scale formation, but instead water entering the coils is pre-heated and simultaneously freed of much of its mineral content. ← (103)



● The Cleveland Vibrator Co. announces the development of a new lightweight, portable vibrator, the type LSRRH. This well-balanced vibrator is designed for heavy-duty use on portable bins, trucks, concrete forms, septic tanks, and large pipe forms that do not require permanent vibrator installation. It develops 7000 to 8000 vibrations per minute at maximum efficiency. It is available with a sturdy cast steel bracket for easy attachment. A handle permits easy handling of this handy vibrator that can perform many jobs around your plant. It is one of a series of electric and pneumatic units offered by the concern. ↑ (104)



● Carter-Waters Corp. is offering Blok-Joint, a high-quality control joint for use in erecting masonry walls. With its exclusive "cross-shape" construction which permits quick, secure interlock and aids in maintaining lateral stability; it is claimed to be the only control joint designed for use with metal window sash blocks. Molded of "100-year life" rubber to provide maximum protection against cracks, it is available in 8-, 24, and 48-inch lengths, and in a 50-ft., 1 piece wrapped roll. This catalog sheet gives full particulars on this product. Blok-Joint has a tensile strength of 2000 psi, elongation of 300%, compression set of 75%, and 75% tensile strength after aging. ↑ (102)

NOVEMBER, 1955

MORE INFORMATION PLEASE

THE CONCRETE MANUFACTURER
431 S. DEARBORN ST.
CHICAGO 5, ILLINOIS

Please send more information on items described in editorial columns of this issue, as circled below.

101 102 103 104 105 106 107 108 109 110
111 112 113 114 115 116 119 118 119

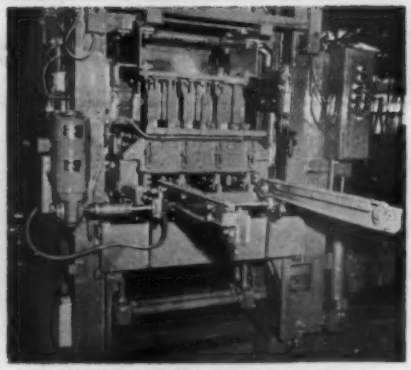
Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

● When using this new lift truck released by General Sales and Engineering Co., an operator is able to quickly and smoothly raise or lower a load either on a skid or on a platform and hold it in any position, even with the motor shut off. Control for the hydraulic power is through an electric push button system which greatly reduces fatigue. Available in 2000 to 5000 lb. capacities, it has a lowered height of approximately 6½ in., and an elevated height of 34 in. ← (105)



● Stearns Manufacturing Co. recently released data on their new motor-driven double pallet block receiver, for Stearns Models 15 and 50 block machines. Operated with a 1/3-hp. gearhead motor and electrical controls, the receiver delivers the first pallet of green block from the machine to the front of the receiver without shock, eliminating breakage. Sprocket and chain type conveyor rails, not affected by oil from the pallets, will replace the roller and gravity type formerly used. The complete units can be easily lifted from the block machine, for mold box changes and machine clean-up. ↑ (106)

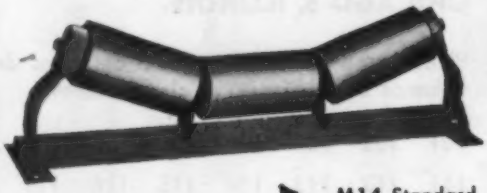
MARCO BELT CONVEYOR IDLERS

CAN BE USED ON ANY CONVEYOR FRAME

That's a fact. Whether you have a frame made of wood, angle, channel or MARCO tubular construction, you will find these idlers adaptable and suited to the most demanding conditions.

Perhaps you'd like some specific information on what MARCO Idlers can do for you. That's easy. Just request a free copy of bulletin ID-2, today. It tells you about the complete line.

MARCO Model 151 Standard Tubular Frame Conveyor charging dry batch bin in ready mix operation.



M14 Standard Troughing Idler

M14 Standard Return Idler

OTHER MARCO PRODUCTS

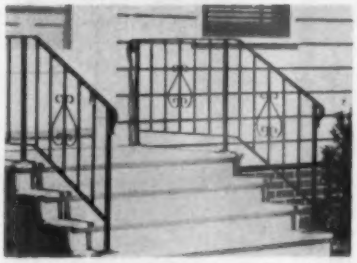
- Tubular Frame Belt Conveyors
- Bucket Elevators • Control Gates
- Feeders • Bins • Solid and Self-cleaning Pulleys

MARCO dealerships are available in some areas.

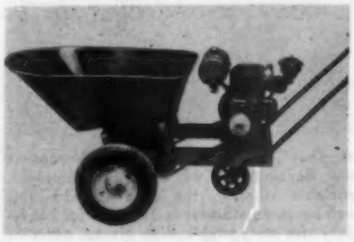
Your inquiry will receive prompt, confidential attention.

E. F. MARSH ENGINEERING CO.

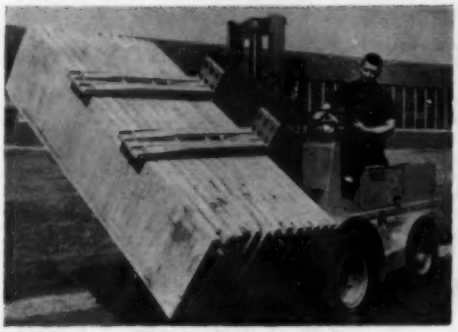
4324 W. Clayton Ave. St. Louis 10, Mo.



● A prefabricated building unit reducing construction costs and improving the quality and appearance of the project is the "Homeward" steps, cast in sections so that two men can lift any part of the largest set. Manufactured by Homeward Step Company, the step set can be furnished from one to six risers high—with or without porch—and in 4-, 5-, or 6-ft. widths. Each slab is reinforced with steel rods and designed to carry many times the load to which it will be subjected. ↑ (107)

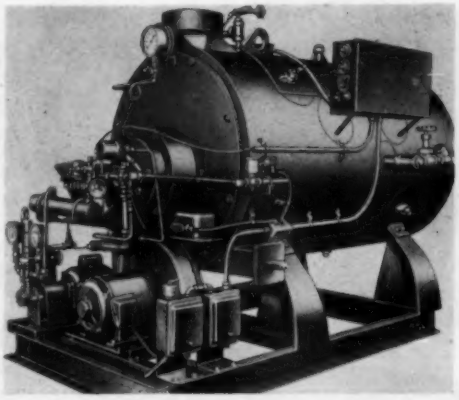


● A power wheelbarrow called the "Lightning Bug" has been introduced by the United Sales Co. It is available in 2 sizes: Junior, powered by a 2-hp. gasoline engine; and Senior, powered by a 4-hp. gasoline engine. Features include a self-tipping tray that is easily controlled and a throttle control—both at the operator's fingertips. The Lightning Bug is also available with a flat pallet for carring blocks, etc. ↑ (108)

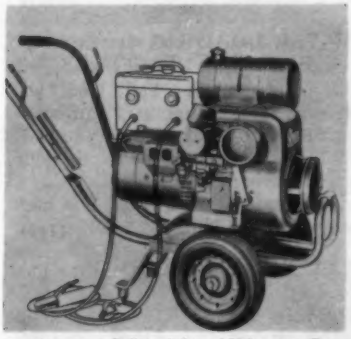


● Concrete roof tile handling can now be expeditiously accomplished through the use of a full-circle rotating, hydraulic clamp designed by the Yale and Towne Manufacturing Company, as an attachment for standard Yale industrial lift trucks. When placed on a standard 6,000-lb. load capacity Yale lift truck, this clamp can pick up a 3,500-lb. load, at a 24-in. load center and rotate it through a 360-degree circle at any point in the vertical travel of the forks. The clamp can be closed to the minimum distance of 17 in. ↟ (110)

● Two new steam generators have been introduced by Cyclotherm Div., National-U.S. Radiator Corp. Shown is the compact 50-hp. unit designed to burn #4 oil. It operates at efficiencies of 80% or better as does a new 40-hp. generator which delivers 1380 lb. of steam per hour with an output of 1,340,000 Btu per hours. Neither of these new boilers requires a concrete foundation for installation. ➔ (109)



● A complete line of laboratory or thin-face bits has been introduced by the Hoffman Bros. Drilling Co. Providing a practical, low-cost method for many I.D. grinding applications, these bits can be operated at speeds from 250 to 3600 rpm. They can be supplied as "Oriented Diamond" surface set or with impregnated diamonds ↟ (111)



● A new, lightweight, 2500-watt Onan electric generating plant, designed with special external modifications to operate any transformer type a.-c. welder up to 150 ampere rating, has been announced by D. W. Onan & Sons Inc. It is available on a 2-wheel dolly or on a welded tubular steel carrying frame. ↟ (112)

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Material Contractors
SAND, GRAVEL AND STONE
274 S. 4TH STREET • PHONE 138Y
ALTAMONT, ILL.

Fleming Manufacturing Company
400 Fleming Avenue
Cuba, Missouri

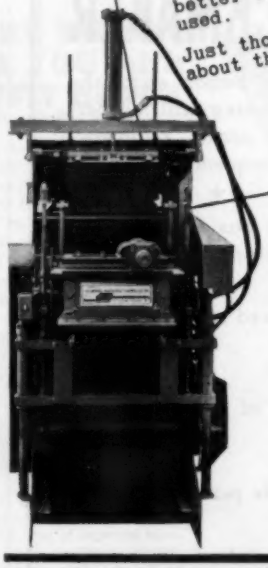
Gentlemen:
The other day a man visited our plant and asked about our new FMC-180. I told him we were 100% satisfied and find that we have doubled our production and lowered our labor cost one-third, thanks to the FMC-180. We think it is a fine piece of equipment and better than any other that we have used.

Just thought you would like to know about this.

Sincerely yours,

W. E. Beck and Son

MR. W. E. BECK
W. E. Beck & Son
Altamont, Illinois



...**doubled** production,
lowered production cost by ⅓,
thanks to the **FMC-180"**

AUTOMATIC CONCRETE BLOCK MACHINE

Just as with Mr. Beck, the FMC-180 has been the answer to higher profits, lower production costs, for block producers throughout the nation. It'll pay you to investigate.

MAIL THE COUPON TODAY!

MAIL TODAY!

FLEMING

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489 FLEMING AVE.
CUBA, MO.
PHONE: CUBA 400

Gentlemen: Please rush complete information, including specifications, prices and terms on the low-priced, fully-automatic FMC-180 concrete block machine.

Also request information on:

☐ Automatic Double Block Machine
☐ FMC Stationary Mixers
☐ Flem-Stone Automatic Block Splitter CM

Name_____
Firm_____
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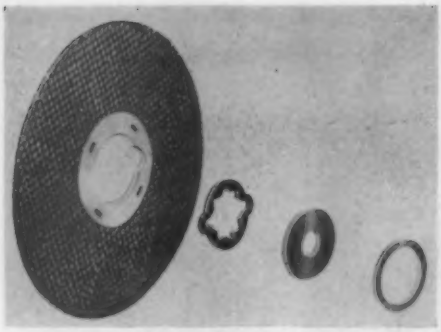


● Victor Engineering Corp. has introduced new, improved 1½- and 3-hp. models of the Valor II masonry saw. Both models incorporate Feedmatic control to eliminate guesswork as to correct blade pressure. Fast hold-height adjustments—a pull on the easy-to-reach knob releases head—a snap and it is in position for close tolerance cutting. Fast diamond-locking head prevents wiggle in rear supports that cause expensive blade shattering ◂ (113)

IDEAL FOR SMALL OR MEDIUM PLANTS

or to supplement large equipment

KENT SUPER BLOCKMAKER

A push button starts the cycle during which operations occur automatically in sequence.

★

Equal delivery of aggregate to the mold box is effected by agitation and mold box vibration assures uniform block density.

★

A SPECIAL air cylinder-powered press head speeds the cycle and assures blocks of uniform height.

★

Consistently produces blocks at a rate of 5 or more per minute from any aggregate.

★

Priced below any machine of comparable performance.

★

Write today for complete information and learn how easily you can improve your situation with the addition of this unusually simple, compact and efficient machine.

The KENT MACHINE COMPANY

CUYAHOGA FALLS, OHIO

CONCRETE PRODUCTS MACHINERY SINCE 1925

Canadian Distributor: Wettlaufer Equipment, Ltd., 49 Merton St., Toronto 12, Ontario

New Literature

REINFORCING masonry walls is economically effected with Blok-Lok, manufactured by A A Wire Products Company. Inventory and order-filling time is saved by new bundle ends which identify the type and size of each package. Blok-Lok is available in bundles of 300 linear ft. (25 pieces) of 12-ft. lengths, or 250 ft. of 10-ft. lengths. (114)

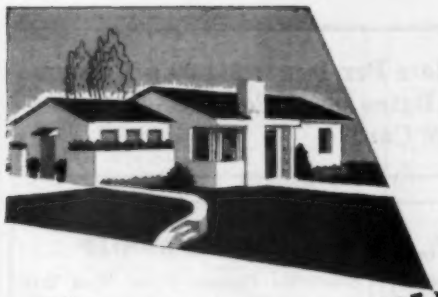
AUTOMATIC TRANSMISSION for fork lift trucks, known as TowmoTorque Drive is described in a new booklet released by the *Towmotor Corp.* Now available on almost all models of the firm's fork lift trucks, the drive combines the time-tested construction features of superior automotive-type torque converter drives with certain advanced design principles. (115)

STEP FORMS with many selling features are offered by *Unit Step.* Available in standard widths of 4-, 5-, and 6-ft., they may be had from 1 to 8 risers high with or without a platform. "Ever-sharp" treads with a really sharp shoulder are provided and lighted or unlighted house numbers may be installed in the riser. (116)

CRANE SCALE of hydraulic design which simplifies weighing is made by *Hydroway Scales, Inc.* The Hydroscale weighs the load as you lift it to move it by being placed on the crane hook. This arrangement minimizes any equipment tie-ups. Tempered safety glass is used on the dials. This brochure gives details on the several models available, including a batching Hydroscale. (117)

FASTER LOADING is accomplished by using *Pettibone* Speed Swings. These ¾- and 1-cu. yd. loaders are mounted on a ball bearing turn-table that swings in a 180-deg. arc that gives the equipment real covering power. Now only a minimum vehicle movement is necessary when loading material. (118)

MATERIAL HANDLING units manufactured by the *Kwik-Mix Company* are listed and described in this catalog. It lists the company's line of interchangeable attachments which extend the usefulness of their equipment. Included in the catalog are units with a tilting platform, gravity dump hopper, and fork lift. (119)



WHITEST BY ANY STANDARD

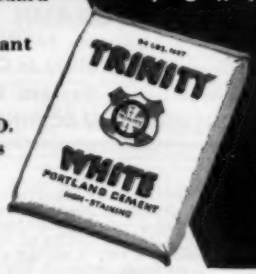
WHITEST

There are dozens of places around the town or farm home where Trinity White portland cement is much more effective. Recommend it for these uses and you will find your sales volume going up and up. Trinity White is much better in appearance than standard grey for walks, pools, drive-ways, etc. Your customer will find the added cost is unimportant in comparison with the appearance of the improvements he has built.

A product of GENERAL PORTLAND CEMENT CO.
CHICAGO • DALLAS • CHATTANOOGA • TAMPA • LOS ANGELES

Trinity White

PORTLAND CEMENT



Whitest in the bag
Whitest in the mix
Whitest in the completed job

As white as snow

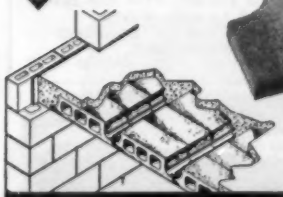
MORE PROFIT FOR YOU with SOFFIT BLOCK

(Floor Filler Block)

Modern Soffit Filler Block floors and roofs meet building code standards . . . endorsed by architects and builders . . . ideal for radiant heat systems . . . many other advantages!

MAKES FLOORS and ROOFS *permanently* FIRESAFE, RIGID, ECONOMICAL!

Section of Soffit Filler Block floor, showing integral joist and slab of reinforced concrete.



You can make them on this BESSER VIBRAPAC

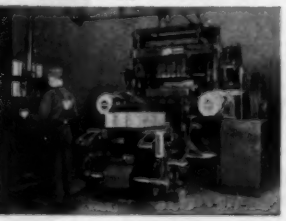
Soffit Filler Block, as well as all styles and sizes of concrete load-bearing block, are made on this same machine, with one set of Plain Pallets.

Write for Bulletin No. 77

BESSER COMPANY

ALPENA, MICHIGAN, U. S. A.

Complete Equipment for Concrete Block Plants



Concrete Manufacturers find

PERMITE N-TAIR

Air Entraining Agent

CUTS COSTS

because it . . .

- has greater air entraining potency.
- does not segregate, settle out or lose efficiency during storage.
- is not corrosive, does not react with components of concrete.
- gives concrete better working qualities, improved plasticity and cohesiveness.

For further economy, Permite N-Tair is made in double-strength solution, as well as in regular. Permite N-Tair meets official specifications of Federal and State Departments.

SAVE WITH N-TAIR. *Send for descriptive bulletin, and name of nearest Permite Distributor.*

ALUMINUM INDUSTRIES, INC.

CURING COMPOUND DIVISION CINCINNATI 11, OHIO

Concrete Curing Compounds and Air Entraining Agents

Concrete Manufacturer Classified Section

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No. 7 JOLTCRETE MACHINE

Excellent production machine complete with motors, plus 4″, 6″, 8″, 10″, 12″ and chimney mold boxes. Plenty of steel pallets and racks. 18′ mixer and skip. Yes a complete package to make a modern production plant. Can be seen in operation now. Will release complete setup in December at time of installing larger equipment. Plant equipment is priced right and is located in N.E. Pennsylvania. Inquire today.

BOX CM-2016 c/o THE CONCRETE MANUFACTURER 431 S. Dearborn St. Chicago, Ill.

OPERATIONS MANAGER

Ready-mixed concrete company operating six plants in Northern California needs man with experience in similar operations. Good salary, excellent future with a growing concern in a pleasant living area. Send complete information. Inquiries confidential.

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POSITION WANTED

Ready-Mix Concrete Plant. What have you? Capable of management, supervision, office details, sales. Also supervise Municipal and Highway concrete paving construction. Some knowledge of block plant operations. Locate any territory. All replies answered. Reply to

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Plant Layout Design Block Machinery

WITTEMANN MACHINERY COMPANY

FARMINGDALE, NEW JERSEY

Specialists in Concrete Products Equipment

Eastern Representatives of the COLUMBIA MACHINE WORKS, Vancouver, Washington

Elevators Bins Conveyors Feeders

CONCRETE PRODUCTS PLANT FOR SALE

In growing industrial city, surrounded by thriving farming area — Southeastern Michigan. Modern plant that cost approximately $150,000.00. Will sell for about one half above amount. To responsible party only about $8,000.00 plus nominal working capital needed to swing transaction. Balance ten years. Personal reasons compel sale.

BOX CM-1012, c/o THE CONCRETE MANUFACTURER 431 S. Dearborn St. Chicago 5, Ill.

WANTED

Engineer thoroughly experienced in Ready-Mix Concrete Plant design, by expanding mid-western manufacturer. Present organization knows of this ad.

Box CM-900, c/o PIT AND QUARRY PUBLICATIONS 431 S. Dearborn St. Chicago 5, Ill.

FOR SALE

Block Plant located in central Michigan 2 Block Machine less than year old. All other block equipment in good condition.
For further details write

BOX CM-2013, c/o THE CONCRETE MANUFACTURER 431 S. Dearborn St. Chicago 5, Ill.

FOR SALE

- Appley-Yellen Semi-Automatic block machine
- Skip
- Mixer
- Motors and Compressor
- Pallet Oiler
- Hydraulic lift truck
- 73 Steel racks
- 3600 pallets—4″ - 8″ - 12″

Equipment has only made approximately 500,000 blocks and is presently in operation and in excellent condition.

Box CM-1016, c/o THE CONCRETE MANUFACTURER 431 S. Dearborn St. Chicago 5, Ill.

WANTED

Salesman to cover State of Michigan and part of Canada for aggressive company. Specialty products. Give complete resume of experience and background.

BOX CM-2020, c/o THE CONCRETE MANUFACTURER 431 S. Dearborn St. Chicago 5, Ill.

COLORS *For Cement and Concrete*

COLOR YOUR CONCRETE WITH LANSCO CEMENT COLORS, available in 40 ATTRACTIVE shades. Suitable for all types of concrete products. Write for our new color card, copy of "Suggestions For Using Cement Colors", and for free samples and price list.

Manufactured by:

LANDERS-SEGAL COLOR CO.

71 Delavan St. • Brooklyn 31, N. Y.

PLAIN PALLET CLEANING

We truck our machine to your plant and supervise entire cleaning and shearing off of pallet residue. No need to shut down as we will keep up with production.

J. FRED MALANE

10265 Berkshire Rd. Detroit 24, Mich.
Phone: Venice 9-4131

FOR SALE

Besser Super Vibrapac. Excellent condition. 30″ Gardner Double Spindle Grinder. Block racks 72—8″ block per rack.

BOX NO. CM-405, c/o THE CONCRETE MANUFACTURER 431 S. Dearborn St. Chicago 5, Ill.

FOR SALE

CEMENT BLOCK MFG. AND READY MIX. Michigan. High Gross sales and net profit of $25,000. This big money maker priced to sell. Write

Box CM-2015 c/o THE CONCRETE MANUFACTURER 431 S. Dearborn St. Chicago 5, Ill.

ATTENTION!

CONCRETE MANUFACTURERS • READY-MIX PRODUCERS

HAVING A CEMENT STORAGE PROBLEM?

I have cement silos with cap from 300 bbl. to 1000 bbl. all welded seamless construction (divided compartments if desired) legs, hatchway, vent, elevator connection, inside and out ladders, painted, shipped in one piece, no erection problem.

"PRICED TO SELL"

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SYRACUSE, N. Y. Phone: 73-1514

GOOD WILL BUILDERS

Your contractor and bricklayer customers will be able to do quicker, easier, straighter work with UB Tools . . . tools that carry YOUR OWN COMPANY ADVERTISING. Linestretchers, Corner Ties, Line Pins, Twigs, Concrete Calculators. We also wholesale a complete line of Blocklayers' Tools. Write for literature and prices.

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SWAP - SELL - BUY

Block Machines
Stearns #7 & 9 Jolterete ..... $ 500.00 each
(Jolterete owners at this price buy one for spare parts.)
Mold Boxes #7 & 9 ..... 150.00 each
2—Stearns Clipper Strippers ..... 250.00 each
1—Stearns 28 Cu. ft. Concrete Mixer.. 995.00
1—Monroe 28 Cu. ft. Concrete Mixer.... 995.00
1—George 28 Cu. ft. Concrete Mixer...750.00
1—Continuous Mixer 150.00
2—Air Offbearers Stearns #7 & 9.. 250.00 each
1—Truckman Lift Truck (excellent condition) 500.00
2—Hand Lift Trucks ..... 175.00 each
2—Clark Fork Lift Trucks, dual pneumatics, 4000 lb. capacity .....1000.00 each
1—40 Cu. ft. Stearns Skip Loader....1000.00
100—Racks for cored steel pallets.... 10.00 each
100,000 pressed steel pallets in stock
(Send tracing or sample for quotation.)

WRITE • WIRE • PHONE
Mr. Flowers

Send in list of equipment you need, if we don't have it in stock, we usually know where we can find it at a bargain.

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Fork and platform power lift trucks, used and guaranteed factory rebuilts.
ERICKSON POWER LIFT TRUCKS, INC.
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MINNEAPOLIS 18, MINNESOTA
Phone—Sterling 1-9508

FOR SALE

Stearns 42 c.f. batch mixer new main bearings and pinion bearings, new shell liners.

SMITHTOWN CONCRETE PRODUCTS CORP.
Box 612 Smithtown, N. Y.

PRESTRESSED CONCRETE FRANCHISE

Lakeland Engineering Associates' proven designs for floor slabs, roof decks, joists, beams, bleachers, and bridge decks, available for manufacturing under L E A P exclusive franchise. Write for details.

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LAKELAND, FLORIDA

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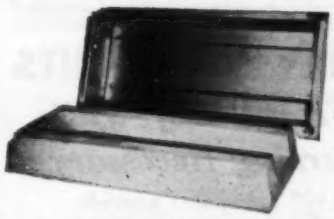
Classified advertising space in the industry's widest-read magazine—only $11.00 per column inch.

THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

MOLDS FOR CAST CONCRETE



METAL MOLDS FOR:

- SPLASH BLOCKS • SILLS
- STEPPING STONES
- "IDEAL" STEP-TREADS
- CHIMNEY CAPS • LINTELS
- VIBRATING TABLES

For Details Write To: **R. L. SPILLMAN CO.**
Box 534 Station G
Columbus, Ohio

FOR SALE

STEARNS JOLTCRETE #9, EXCELLENT CONDITION, 8" & 12", STEEL PALLETS, UNDERCAR UNLOADER, PLATFORM TRUCKS, COMPRESSOR AND OFF-BEARER, RACKS, 28 CU. FT. MIXER, ETC. SACRIFICE.

HERCULITE BLOCK AND SUPPLY COMPANY
180 COIT STREET
IRVINGTON, NEW JERSEY
ESSEX 3-4323

MINERAL COLORS
for
BRICK MORTAR STUCCO-PLASTER-CONCRETE

"Fine Because of Their Fineness"
Ask for samples and recommendations.
BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

GERSON'S GOOD WILL BUILDERS

ADVERTISING NECESSITIES
FOR THE BLOCK INDUSTRY. LINE PINS, TWIGS, CORNER BLOCKS, CALCULATORS.
Complete Catalog on Request.
GERSON CO.
97 Dearing Rd. Mattapan, Mass.

PLAIN STEEL PALLETS

Guaranteed Quality
Flat • Square • Accurate
GARY STEEL SUPPLY COMPANY
2300 S. Springfield Ave.
CRawford 7-2525 Chicago 23, Ill.

WANTED

1—Good used power lift truck, 4000 lbs. capacity, pneumatic tires for handling block.
1—Stearns 28 c.f. mixer.
1—One-yard weigh batcher.

CHERRYVILLE CONCRETE PRODUCTS CO.
North Pink Street Cherryville, N. C.

WANTED

Plain pallet concrete block machine to make 2" to 8" high units. Must be in good condition, fairly new. (Two Block)

MODERN MASONRY PRODUCTS CO.
North Madison, Ohio

CEMENT COLORS

All shades and grades the highest quality. Write for color cards, prices and samples
RICKETSON MINERAL COLOR WKS.
MILWAUKEE 2, WISCONSIN
Established 1885

FOR SALE

2—7'x72' Diameter Autoclaves.
150 lb. Pressure quick opening doors on both ends, Autoclaves could be cut in half and made into four autoclaves of desired length with door on one end. Priced for quick sale. Inquire

Anchor Concrete Products, Inc.
2450 William St. Buffalo 6, N.Y.
Grant N. Reinhold—Humboldt 3152

WANTED

Plain pallet—high production block machine. Complete with pallets, mixer and skip. Equipment, though used, must be in very good condition otherwise will not consider.

If you plan to discontinue business or retire and want to sell, or lease, your entire block producing equipment, write me today. I have a fifteen year supply of cinders and want to set up complete equipment by January 1956.

BOX CM-2017 c/o
THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago, Ill.

FOR SALE

5,000 Plane Steel Pallets—5/16" x 18½" x 26" at $1.25 each. F. O. B. Dearborn, Michigan.

John A. Mercier Brick Company
3895 Roulo Ave. Dearborn, Mich.

STEARNS MODEL 15 FOR SALE

Plain pallet machine, 5 yrs. old, with many attachments, extras and spare parts. Cost $42,000.00; now bargain priced.

A. R. Mulhall
BERGEN Machine & Tool Co.
Nutley, N.J.
Nutley 2-7300

For Sale—Surplus Equipment

One Lith-I-Bar, two-at-a-time block machine with molds, offbearing hoist, pallets and racks. All in good condition, used less than 6 months. Write phone or wire.

CINDERCRETE PRODUCTS, LTD.
Regina, Saskatchewan, Canada

GEORGE W. HOFFMANN CO.
P. O. BOX 452
SIOUX CITY, IOWA, U.S.A.
Concrete Pipe Forms & Vibrators

PORTLAND
PENN-DIXIE
CEMENT

CONCRETE INCREASES FARM EFFICIENCY

PENN-DIXIE CEMENT *Corporation*

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STEP UP YOUR INCOME!

Build Septic Tanks with
CARPENTER EQUIPMENT

Concrete profits get a big boost with CARPENTER Forms and Handling Equipment . . . today's *faster* way to build *better* septic tanks at lower cost. Speed up pouring, setting, stripping, resetting. ONE MAN handles our Delivery Rig. Satisfied customers all around the country.

Write for Details

CARPENTER MFG. CO.
Phone 28938, Carrier 94, Box 470
Richmond 23, Virginia

WHEELER TESTING VIBRATOR

New and unexpected uses for our machines appear from time to time. Recently we visited the Engineer of Tests for a large railroad company. He was vibrating insulating pads in twelve inch sieves, running the machine eight hours per day five days per week.

For full details write:

WHEELER CO., INC. 2408 Harrison St., Topeka, Kansas
(Distributor Territories Open)

THERMO STONE BRICK EXPOSED MASONRY WALL UNITS

Dry, Frost-Proof Walls
No Furring Necessary

Two 1½" air spaces provide sufficient insulation.

PATENT PENDING

FRANCHISE MAY BE OPEN IN YOUR TERRITORY

Please address all inquiries to:

B. E. SCOTT, THERMO STONE BRICK, 1605 PIONEER BLDG., ST. PAUL 1, MINN.

Another BESSER Booster*

* This is the 124th of a series of ads featuring leaders of the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.

Well-known Brick Manufacturer Proves it Pays to Handle BOTH Brick and Block

The Washington Brick Company, in our nation's capital, learned from experience that a brick plant can substantially increase profits by producing and selling concrete block as well as clay brick. For many years, their brick customers had to go elsewhere for their foundation and back-up units. Thirteen years ago, with the upsurge of building construction, they decided to do something about it.

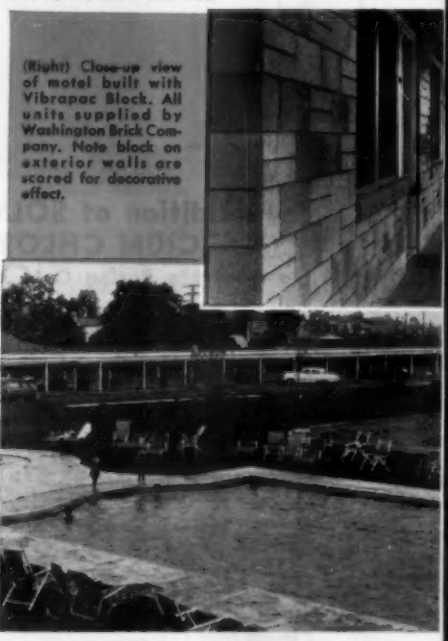
The company installed its first Besser Vibrapac machine in August, 1942. This initial machine was so satisfactory and, with the greatly increased demand for block, Washington Brick Company added four more Vibrapac machines — two in 1947, one in 1950 and one in January of this year.

Today, the company is in a good position to supply both brick and block . . . *material for the entire wall.* The high production of the dependable Vibrapac machines is an important factor in the company's success. Complete information on Vibrapac machines sent on request, without obligation.

BESSER COMPANY, Box 131, Alpena, Mich., U. S. A.

Complete Equipment for Concrete Block Plants

Washington Brick Company executives, (left to right) T. Somerville III, Pres.; R. S. Frazier, Plant Mgr.; J. C. Harding Jr., Exec. Vice Pres.



(Right) Close-up view of motel built with Vibrapac Block. All units supplied by Washington Brick Company. Note block on exterior walls are scored for decorative effect.

Sky-Lark Motel — one of America's most modern motels with 125 air-conditioned rooms and two swimming pools. All walls are Vibrapac Block constructed for maximum comfort and firesafety.

Battery of Vibrapac machines in the Washington Brick Company plant, Washington, D. C. Fully automatic. No machine operator required. Off-bearer merely guides the power hoist.

Exterior view of Washington Brick Company plant. In addition to standard building units, the company produces filler block for floors and roofs.

VISIT THE BESSER EXHIBITS at the Architects' Samples Corporation, 101 Park Avenue, New York City and the new National Housing Center, Washington, D. C.

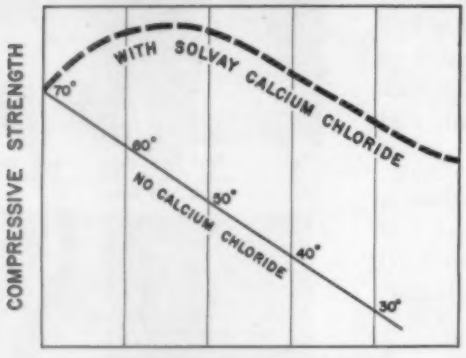
BESSER VIBRAPAC

WORLD'S LEADING MANUFACTURER OF CONCRETE BLOCK MACHINERY

SOLVAY

CALCIUM CHLORIDE

KEEPS CONCRETE STRENGTH from DROPPING with the TEMPERATURE



The Addition of SOLVAY CALCIUM CHLORIDE

to Concrete During Cold Weather . . .

• Speeds finishing • Assures full strength • Permits faster removal of forms • Provides greater safety • Cuts delays between operations

NEW 25 LB. BAGS FOR READY-MIX CONCRETE

Easy-to-Handle
•
Assures Accurate Measurement
•
Saves Time

FOR FULL INFORMATION MAIL COUPON

Allied Chemical

SOLVAY PROCESS DIVISION
Allied Chemical & Dye Corporation
61 Broadway, New York 6, N. Y.

Gentlemen:
Please send me — WITHOUT COST OR OBLIGATION:

☐ "When the temperature drops BELOW 50°F., do you know what happens to CONCRETE?"

☐ "The Effects of Calcium Chloride on Portland Cement"

Name_____

Company_____

Address_____ Position_____

City_____ Zone____ State_____ CM-11

CONCRETE MANUFACTURER INDEX TO ADVERTISERS

A A Wire Products Co. 223
Adams Division, LeTourneau-Westinghouse Co. 274
Aluminum Industries, Inc. 267
American Clay Machinery Div.
Huber-Warco Co. 245

*Bergen Machine & Tool Co., Inc. 222
*Besser Manufacturing Co. 218, 250, 267, 271
*Burmeister Co. 248

C & W Sales Co. 226
Carpenter Mfg. Co. 270
Carter-Waters Corp. 237
Chase Foundry & Mfg. Co. 262
Classified Section 268-269
Columbia Machine Works 225

Darden Industries, Inc., Roy 257
Dow Chemical Co. 221

Economy Forms Corp. 232
Erickson Power Lift Trucks, Inc. 259
*Erie Strayer Co. 238-239

Fanning-Schuett Engrg. Co. 273
Fleming Mfg. Co. 265

General Engines Co., Inc. 269
Griffin, Larry 268

Haverstick Bros. 252
*Hoffmann Co., Geo. W. 269
Huber-Warco Co. 245

Instant Moisture Control,
Div. of Colorado Premix Concrete Co. 220

Jaeger Machine Co. 243

Kent Machine Co. 266
Kirk & Blum Mfg. Co. 226

Littleford Bros. 259
Lone Star Cement Corp. 214

Mace Company 262
Marsh Engineering Co., E. F. 264
Medusa Portland Cement Co. 227
Multipack, Inc. 241

National Wire Cloth Co. 262
Noble Company 247

OK Manufacturing Co., Inc. 252
Olsen Corp., Gene 275
Oronite Chemical Co. 215
Oswalt Engrg. Service Corp. 259

Penn-Dixie Cement Corp. 270
PreCaster, Inc. 224

Quinn Wire & Iron Works 252

Radio Corporation of America 231
Reichard-Coulston, Inc. 216

St. Lawrence Cement Co. 216
Scheu Products Co. 250
Servicised Products Corp. 232
Shawnee Step Form Co. 262
Side-O-Matic Unloader Corp. 260
Solvay Process Division,
Allied Chemical & Dye Corp. 272
Spillman Co., R. L. 269
Spray-O-Bond Co. 260
*Stearns Manufacturing Co. 229, 276
Surety Rubber Co. 250

Thermo Stone Brick Co. 270
Towmotor Corporation 261
Trinity Div. General Portland Cement Co. 267
*Twin City Iron & Wire Co. 252

Wheeler Co., Inc. 270
Wiley & Sons, Inc., John 260
Williams, Roger F. 260
Worthington Corporation 249

*See also Detailed Information in 1955 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK

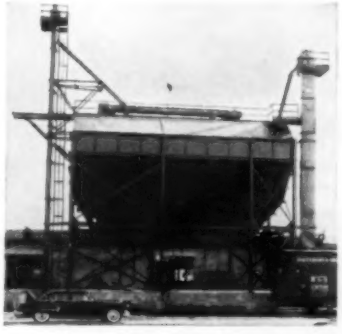
When increased demand makes plant expansion necessary...

design with Fanning-Schuett

CORSON CONCRETE COMPANY, Plymouth Meeting, Pa., is expanding its plant with an additional large storage bin and an additional mixer and batching facilities to meet the expanded demand for central mix in the Plymouth Meeting - Norristown area. The present belt conveyor will serve both storage bins by the addition of a short return belt conveyor for the second bin. Another Fanning-Schuett plant addition.

The problem of providing enough cement and concrete for the tremendous building program of our ever-growing economy has focused attention on the need for plant expansion. All over the country concrete plants are turning to Fanning-Schuett for economical additions to existing facilities.

For new plants as well as these expansions, there is a good reason for designing with Fanning-Schuett. Almost a half-century of experience has given Fanning-Schuett a "know-how" which means top efficiency in cement and concrete handling and storage equipment.



MAINE CEMENT PRODUCTS COMPANY, INC., Portland, Maine. A complete new plant is being designed and built for this rapidly growing company to produce concrete blocks and other products for the Home Building Program. Included in the plant are five storage bins for aggregates; one storage bin for cement; and handling equipment such as machinery for handling cement, screw and belt conveyors and two elevators.

FANNING-SCHUETT JOBS IN PROGRESS

SUPER CONCRETE CO., INC., Cumberland, Maryland. This company is building a whole new plant for ready mix concrete and manufacture of blocks. They have outgrown their original plant and are now laying out a new plant.

CONCRETE PRODUCTS COMPANY, Shippensburg, Penna. This company manufactures concrete blocks and other building products and is now converting to handle bulk cement. They are installing an unloading screw conveyor and elevator, a storage bin for 400 barrels, a screw conveyor and automatic controls for scale equipment over the mixer.

RIDGE CONCRETE, INC., Bartow, Florida. The ready mix concrete plant of this company is being expanded, and they are also installing block-making equipment for which they have purchased storage bins and an extension of their present belt conveyor system.

McDERMITT BROS. READY MIX CONCRETE, Gettysburg, Penna. This company is prominent in the Gettysburg area and has been in the ready mix business for many years. They have just made a large installation at Union Bridge, Maryland, to supply ready-mix concrete for the expansion of the facilities for the Lehigh Cement Co. They have also made a complete setup for handling of aggregates including elevators for sand and stone and a bulk cement handling outfit.

GELBMAN, INC., EXPANDED AGGREGATES CORP., New York City N. Y. This company is starting to build a complete plant for manufacturing light weight aggregates from slate wastes. They will install rotary dryers, belt conveyors, crushers, mixers, etc., to make a complete plant for the manufacture of light weight aggregates by sintering.

FANNING-SCHUETT ENGINEERING COMPANY
4325-39 NORTH THIRD STREET PHILADELPHIA-PENNSYLVANIA

TRANSIT WESTINGHOUSE MIXER

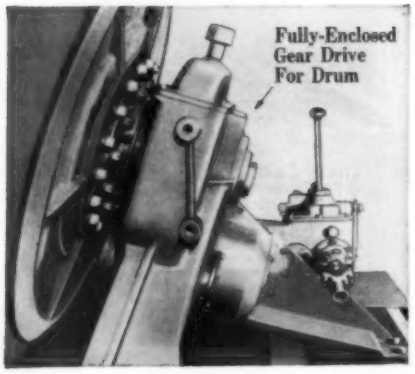
The Only Transit Mixer With Enclosed Gear Drive

● All other things being equal, or better, don't you think that a mixer with drum driven by enclosed gears would be preferable to one driven by exposed gears or chains? That's what you get in Westinghouse Transit Mixers—the only mixers with enclosed gear drive.

With this valuable patented feature you get a ball-and-socket self-aligning drum mounting, "double-action" mixing drum which accomplishes a quicker, more uniform mix, 2-speed transmission and other features which you'll like.

Westinghouse Mixers are thoroughly dependable and economical—time-tested by prominent users. They're available in 5 sizes—4½ to 6½ yd. Write now for descriptive literature to

ADAMS DIVISION
LeTourneau-Westinghouse Co., Indianapolis, Indiana
Member of NRMCA



The Westinghouse enclosed-gear drum drive requires no more attention than a standard automobile transmission. No chains to break—get too tight or too loose. No pinion and rack to wear out from abrasion. No daily lubrication . . . No stresses are transmitted to any part of drive due to frame flexing in traveling over uneven surfaces.

USE LESS CEMENT WITH A GOCORP "KING"

INSTALLATION AT HARRY HALEY AND SONS LTD., OTTAWA, CANADA

. . . BECAUSE IT PACKS BETTER

FACT – A prominent producer operates a GOCORP "King" and a popular competitive machine. Frequent testing is routine in this plant . . . they insist on top quality. Blocks from the "King" run consistently higher in strength – yet they contain 10% less cement. What is 10% of *YOUR* annual cement bill???

FACT – A GOCORP "King" Packs Better – Pallet is clamped to the mold and the two vibrate as a unit • *Exclusive "Resonance" vibration gives intense directional motion – whiplike change of direction.

FACT – Longer Packing Time With a "King"– The smooth unhurried motions of this hydraulic machine, at 20 blocks per minute, allow a full 11 seconds of intense packing for each block. To get comparable quality and packing time on an ordinary machine, output must be cut 40%.

PLUS – Sequence operation – for easier adjustments and greater production • Under Machine Pallet Return – saves space and time • Hydraulic Drive – smooth effortless performance, far less wearing parts, less down time, less maintenance, *lower unit costs* • Factory Trained Service Men.

AUTOMATION – Certainly!! For the ultimate in high production, high quality and low unit cost – it's the "King" plus RACKMAN (GOCORP'S revolutionary automatic rack loading device).

***Write for your copy of folder "GOCORP PLAIN PALLET MACHINES" which explains the features of the GOCORP "Senior" and "King"**

GOCORP
ADRIAN-MICH.
454 GRACE ST. • PHONE COLFAX 8-7165

Owners say...

THE STEARNS BIG 3*

(SERIES 50 BLOCK MACHINES)

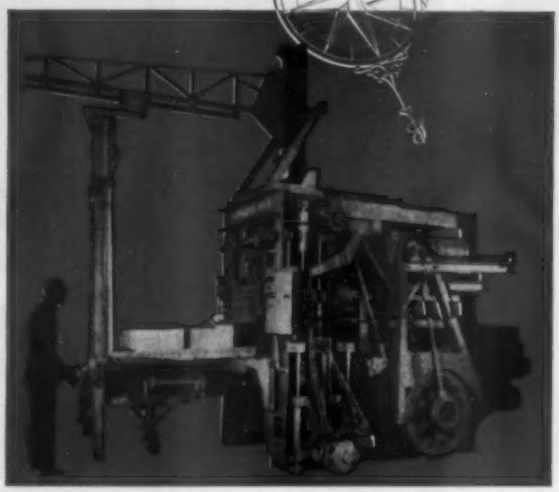
REMOVE ALL DOUBT!

. . . for

✓ DEPENDABILITY

✓ TOP PRODUCTION, QUALITY UNITS

✓ LOWEST UPKEEP



The following excerpts were taken from letters from enthusiastic owners of Stearns Series 50 block machines. (The Big 3):*

. . . "Amazed at the high productivity of perfect units."

. . . "The high production of excellent block, more than justified the small additional cost."

. . . "Blocks superior to any we have ever seen."

. . . "We investigated *all* makes and chose the Model 50-3*."

. . . "During 15 years, we have operated six makes of machines, now the answer is simple, a Stearns 50-1*."

. . . "Lowest labor and upkeep cost in our history."

. . . "To anyone considering a new machine, we urge them to see the Stearns Model 50-1* in operation first!"

. . . "The Stearns 50-3* spells *profit* in any man's language."

. . . "We have had many machines since 1907, and the Stearns 50-3* offers the most in block machines today."

. . . "Our sales are the highest in our history, and our bouquets go to our dependable Stearns 50-2* which made it possible. It's no problem to sell block on quality and precision now."

ASK ANY OWNER!

*** THE BIG 3**

Model 50-3 makes three 8" x 8" x 16" or equivalent units per cycle. Maximum size pallet, 5/16" x 18½" x 26".

Model 50-2 makes two 10" x 8" x 16" or equivalent units per cycle. Maximum size pallet, 5/16" x 18½" x 20½".

Model 50-1 makes two 8" x 8" x 16" or equivalent units per cycle. Maximum size pallet, 5/16" x 18½" x 18¼".

WE'LL SEE YOU AT THE TEXAS AND SOUTHEASTERN REGIONAL MEETING, N.C.M.A. SHAMROCK HOTEL HOUSTON, TEXAS NOVEMBER 21-23

STEARNS

MANUFACTURING COMPANY, INC.

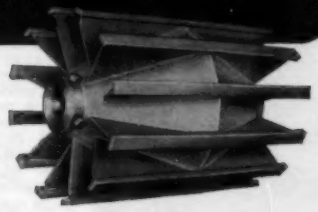
ADRIAN • MICHIGAN

COMPLETE CONCRETE PRODUCTS PLANT EQUIPMENT

ECONOMICAL TO BUY • PROFITABLE TO OWN

THOUSANDS

OF HOURS OF DEPENDABLE OPERATION AT LOWER COST

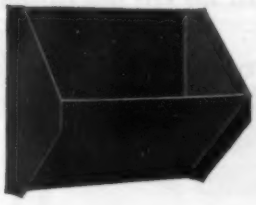


- SELF CLEANING
- STRONG REINFORCED WELDED CONSTRUCTION
- LOW COST

STANDARD WING TYPE SELF-CLEANING PULLEY

So strong it can withstand the most punishing loads without flinching because its all-steel welded construction gives it far greater strength with less weight at lower cost.

CONTINUOUS ELEVATOR BUCKET STYLE #2



Built to take the hardest use you can give it and come back for more, this bucket is typical of the complete line of low cost, rugged Standard Steel Buckets — available in Salem, Style "A," shelf type and other continuous style buckets.

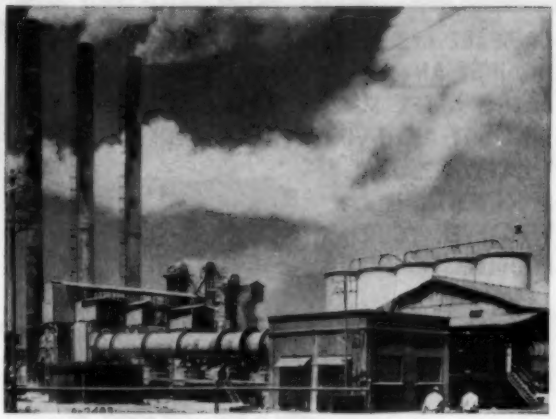
STANDARD BIN GATE

Speed material handling with this Standard gear-operated bin gate, which has all-steel welded construction. Other styles in Standard Bin Gates also available.

Slash material handling costs by converting to Standard. Write today for catalog showing the complete Standard line.

STANDARD METAL MFG. CO.
111 CENTER ST. MALINTA, OHIO

MEXICO'S CEMENT NEEDS SOAR



Cementos Portland del Bajio plant. Note the cluster of bucket elevators in center background.

and Stephens-Adamson Conveying Keeps Pace!

In Mexico most cement plants today are pushing production peaks to keep up with sky-rocketing needs. Such a plant is that of Cementos Portland del Bajio, S. A. at Leon, Guanajuato, one of a number of Stephens-Adamson equipped cement plants in Mexico.

Able to produce up to 600 tons of cement per day, this plant rates among the nation's largest. Stephens-Adamson conveying equipment is making the job easier!

In 1946, Stephens-Adamson provided 14 bucket elevators —later supplied chain and screw conveyors. Handling everything from 1½" limestone to finished cement, the elevators range from 31 to 72 feet lift. Chain-mounted buckets take the tough punishment of cement production right in stride.

Why not find out *now* how precisely, and economically, S-A equipment fits your bulk materials handling needs? Write for full information. No obligation.

Tallest of these bucket elevators, some of the 14 furnished in 1946, has a lift of 72 feet.

STEPHENS-ADAMSON MFG. CO.

20 Ridgeway Avenue, Aurora, Illinois

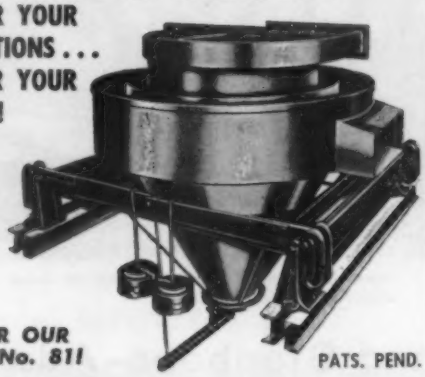
Los Angeles, Calif. • Belleville, Ontario

Engineering Division	Specialists in the design and manufacture of all types of bulk materials conveying systems.
Standard Products Division	A complete line of conveyor accessories, centrifugal loaders – car pullers – bin level controls.
Sealmaster Division	A complete line of industrial ball bearing units available in both standard and special housings.

AUTO VORTEX CLASSIFIERS...

MOST EFFICIENT BY ANY MEASURE FOR SINGLE OR MULTIPLE SPLITS!

COMPARE RESULTS . . . COMPARE COSTS . . . AGAINST ANY OTHER SAND GRADATION EQUIPMENT! AFTER SUCH COMPARISON, YOU, TOO, WILL BUY AUTO-VORTEX CLASSIFIERS . . . WHATEVER YOUR SPECIFICATIONS . . . WHATEVER YOUR PROBLEMS!



WRITE FOR OUR BULLETIN No. 81!

PATS. PEND.

CHARLES E. WOOD COMPANY

906 NORTH WATER ST. • MILWAUKEE 2, WISCONSIN

CUT TIME AND LABOR COSTS

on "secondary breakage"

with FREDERICK CAST semi-steel DROP BALLS

Eliminate costly, time-consuming drilling or blasting with this low-cost production tool. Rugged, durable Frederick Drop Balls provide you with quick, easy crushing power where you want it—when you want it, with little or no maintenance. Frederick's exclusive "pear-shaped" design withstands greater impact and gives straighter "pin-point" drops. Exclusive "E-Z Swing" steel eye is recessed to prevent excessive ball movement and keep hook in place. Nickel alloy is standard on balls 4000 lbs. or over—or, we'll be glad to quote on special alloys if desired.

Balls can be furnished with replaceable pins, if requested. Special release hooks for free dropping are also available.

Write today for prices and illustrated literature; send order direct or telephone.

	Wide Range of Sizes and Weights:						
Pear shape (lbs.).....	1500	2000	3300	4000	5200	6500	8000
Ball shape (lbs.).....	500	1000	2000	5200			
Spherical shape (lbs.)..... (for magnet use)	470	950	1650	2400	3000	3700	5400

FREDERICK IRON & STEEL, INC.

FREDERICK *Established 1890* MARYLAND

Phone: MOnument 3-5111

CENTRIFUGAL PUMPS • MUNICIPAL AND GRAY IRON CASTINGS

Bacharach ENGINE WORK STAND

★ Positions engine at bench level height.
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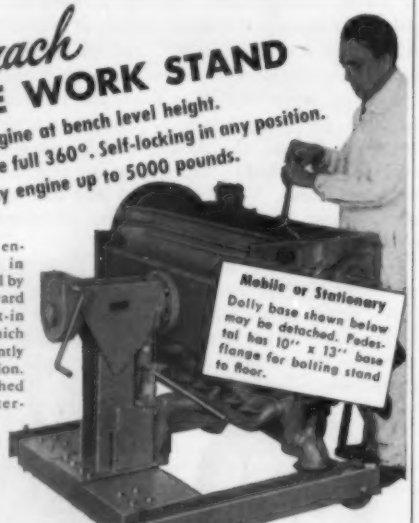

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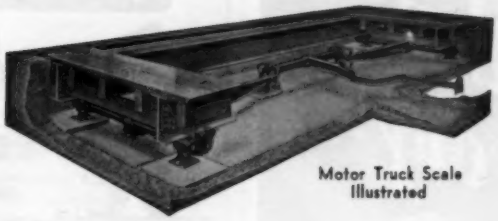

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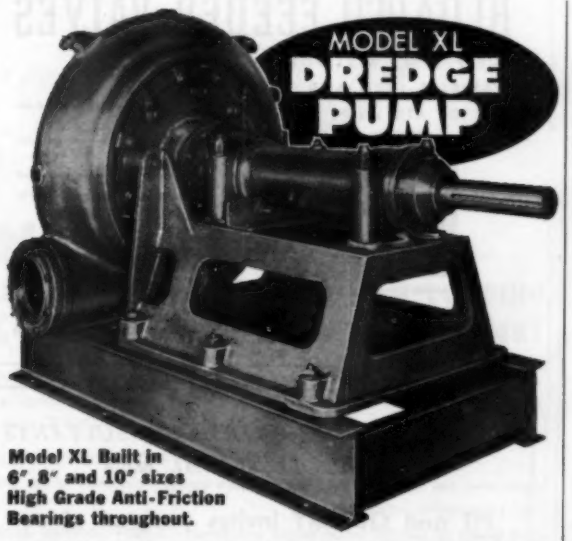

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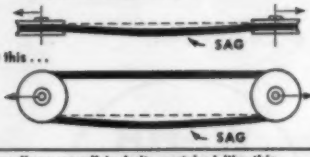

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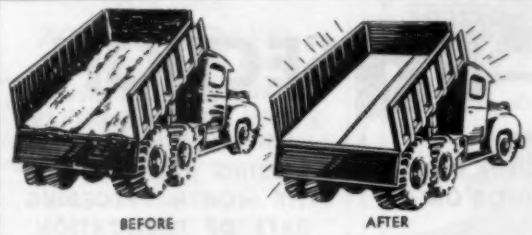

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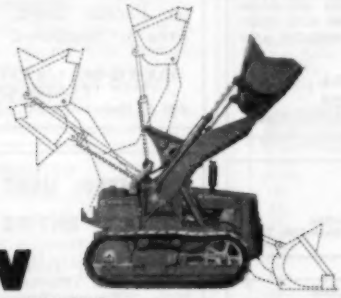

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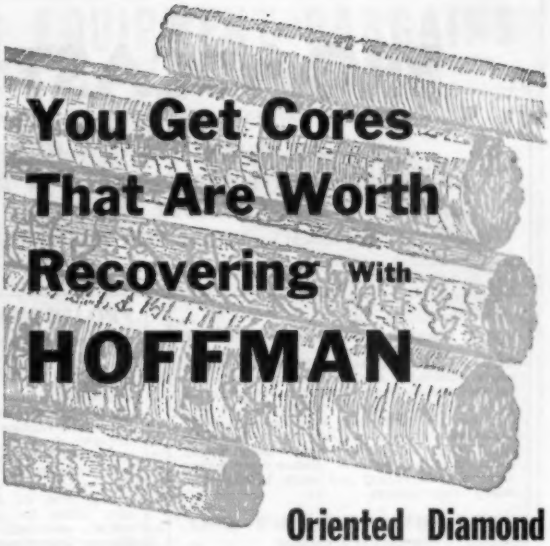

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Superintendent for large Stone Quarry and Crushing Operation. Must be qualified to do blasting and to supervise entire operation. Location in Eastern State. Please advise experience and capabilities and salary expected.

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Cement Plants
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Operating Costs

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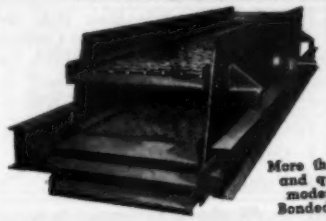

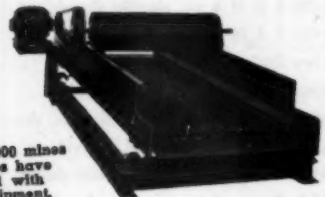

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Model Number	Screening Area	No. of Decks	List Price	Sale Price
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224AS	2'x4'	2	435	375
126AS	2'x6'	1	449	375
226AS	2'x6'	2	473	395
136AS	3'x6'	1	581	495
236AS	3'x6'	2	665	565
336AS	3'x6'	3	916	815
138AS	3'x8'	1	685	575
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16"	45'	1928	1012
16"	60'	2494	1284
18"	25'	1327	739
18"	45'	1988	1085
18"	60'	2575	1354
18"	85'	3468	1798
18"	100'	4000	2065
20"	25'	1368	770
20"	45'	2122	1145
24"	25'	1428	835
24"	45'	2227	1237
24"	60'	2828	1548
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18"	4.27 foot	3.19 foot
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3-roll, 5" diameter Troughing Idlers for

14" belt	$17.25	24" belt	$19.75
16" belt	18.00	30" belt	20.50
18" belt	19.00	36" belt	21.25
20" belt	19.25	48" belt	23.75

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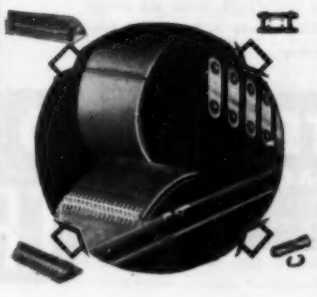

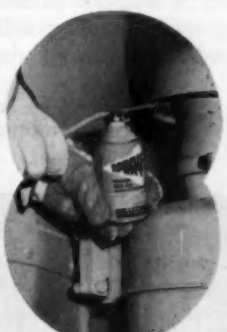

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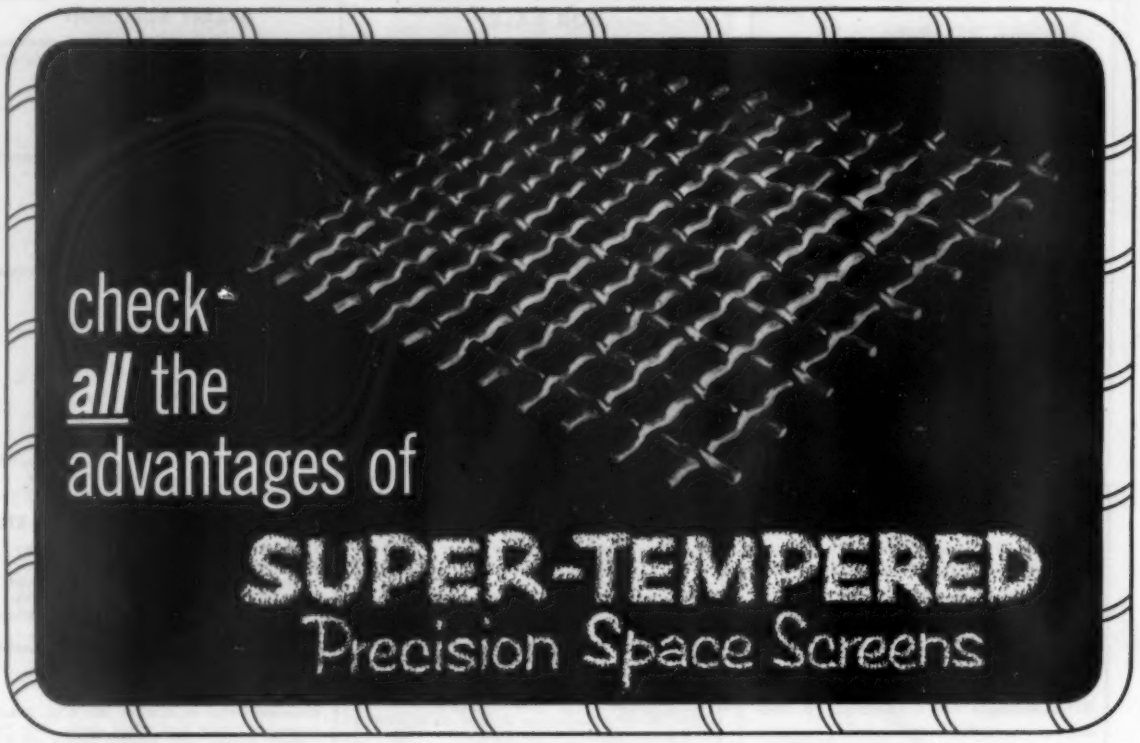

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INDEX TO ADVERTISERS

A A Wire Products Co. 223
Adams Division, LeTourneau-Westinghouse Co. 274
Admiral Alloy Steel Corp. 281
Ajax Flexible Coupling Co., Inc. 188
Albemarle Paper Mfg. Co. 81
Allied Chemical & Dye Corp. Solvay Process Div. 272
Allied Steel & Tractor Products, Inc. 180
*Allis-Chalmers Mfg. Co. 13, 147
*Allis-Chalmers Mfg. Co., Buda Division 205
*Allis-Chalmers Mfg. Co., Tractor Division 106-107
Aluminum Industries, Inc. 267
American Air Compressor Corp. 285
American Brake Shoe Co. 181
American Clay Machinery Div. of Huber-Warco Co. 245
American Crankshaft Co. 224
American Cyanamid Co. 55
American Hoist & Derrick Co. 24, 153
American Manganese Steel Div. American Brake Shoe Co. 11, 194
American Road Builders' Assn. 175
*American Steel & Wire Div., U. S. Steel Corp. 37
Anaconda Wire & Cable Co., Sub. of Anaconda Copper Mining Co. 185
Armstrong-Bray Co. 289
Athey Products Corp. 44
Atlas Powder Co. 192
Austin-Western Company 195
Autocar Division, White Motor Co. 189

*Babcock & Wilcox Co. 51
Bacharach Industrial Instrument Co. 270
Baldwin-Lima-Hamilton Corp. Construction-Equipment Div. 195
*Barber-Greene Co. 145
Bay City Shovels 146
*Bemis Bro. Bag Co. 64
*Bergen Machine & Tool Co., Inc. 222
*Besser Co. 218, 250, 267, 271
*Bethlehem Steel Co. 177
*Blower Application Co. 280
Bonded Scale & Machine Co. 283
Brill Equipment Co. 287
Broadcast Section 282-289
*Brunner & Lay, Inc. 166
Bucyrus-Erie Company 207
*Buda Division, Allis-Chalmers Mfg. Co. 205
*Buell Engineering Co., Inc. 161
*Burmeister Co. 248

C & W Sales Co. 226
Calumet Division, Calumet & Hecla, Inc. 60
*Calumet Steel Castings Corp. 279
Cape Ann Anchor & Forge Co. 182
Carlyle Rubber Co., Inc. 287
Carpenter Manufacturing Co. 270
Carter-Waters Corp. 237
Caterpillar Tractor Co. 40-41
Chase Bag Company 152
Chase Foundry & Mfg. Co. 262
Chicago Pneumatic Tool Co. 20
Chrysler Corporation Industrial Engine Div. 57
Cities Service Oil Co. 95
Clark Equipment Co. 61
Cleveland Vibrator Co. 188
Cleveland Wire Cloth & Mfg. Co. 166
Cleveland Worm & Gear Co. ....Inside Back Cover
Colorado Fuel & Iron Corp. 151, 290
Columbia Machine Works 225
*Combustion Engineering, Inc. Raymond Division 16
Concrete Manufacturer Classified Section 268-269
*Continental Gin Co. 171
Conveyor Company 278

Darden Industries, Inc., Roy 257
*Deister Concentrator Co. 168
*Deister Machine Co. 9
Dempster Brothers, Inc. 193
Detroit Diesel Engine Div. General Motors Corp. 86-87
*Diamond Iron Works, Inc. 209
Dodge Manufacturing Corp. 58
Dow Chemical Co. 221
Drott Mfg. Corp. 155
Du Pont de Nemours & Co., E. I., Inc. 105
Durkee-Atwood Co. 280

*Eagle Crusher Co. 98
*Eagle Iron Works 23
*Easton Car & Construction Co. 3
*Eaton Mfg. Co. 159
Economy Forms Corp. 232
Eighmy Equipment Co. 286
Eimco Corporation 17
Ensign-Bickford Co. 101
Equipment Corp. of America 288
Erickson Power Lift Trucks, Inc. 259
*Erie Strayer Co. 238-239
*Euclid Division, General Motors Corp. 83

*Falk Corporation 139
Fanning-Schuett Engrg. Co. 273
*Farrel-Bacon 62
Fellens Coal & Dock Co. 186
Firestone Tire & Rubber Co. 103
Fiske Brothers Refining Co., Lubriplate Division 154
*Fleming Mfg. Co. 265
Flexible Steel Lacing Co. 182
Frank, M. K. 289
Frederick Iron & Steel, Inc. 278
Frog, Switch & Mfg. Co. 32
*Fuller Co. 34, 211

Galion Allsteel Body Co. 162
Gates Rubber Co. 198
General Cable Corp. 66
*General Electric Co. 26-27
General Engines Co., Inc. 269
*General Motors Corp. 83, 86-87
Goodyear Tire & Rubber Co. 1
Griffin, Larry 268
Gulf Oil Corp. 130-131

H & L Tooth Company 280
Hamilton Rubber Co. 172
Hannon & Sons, F. D. 184
*Hardinge Company, Inc. 56
Haverstick Bros. 252
Hazard Insulated Wire Works, Div. of The Okonite Co. 132
Heat & Power Co. 286
Heidenreich, E. Lee, Jr. 282
Heineken, Inc., W. P. 286
*Hendrick Mfg. Co. 212
Hendrix Mfg. Co. 202
*Hercules Motors Corp. 54
Hetherington & Berner, Inc. 280
*Hewitt-Robins, Inc. 203
Highway Machinery Co. 283
Hobart Brothers Co. 176
Hoffman Bros. Drilling Co. 281
*Hoffmann Co., Geo. W. 269
Hough Co., Frank G. 67
Huber-Warco Co. American Clay Machinery Div. 245

Industrial Brownhoist Corp. 141
Industrial Radio Corp. 28
*Ingersoll-Rand Co. 191
Instant Moisture Control, Div. of Colorado Premix Concrete Co. 220
International Harvester Co. Drott Shovels 155
International Harvester Co. Industrial Power Div. 14-15, 63
International Nickel Co. 197
International Paper Co. Bagpak Division ....Inside Front Cover
*Iowa Manufacturing Co. 41

Jaeger Machine Co. 243
Jeffrey Mfg. Co. 8
*Johns-Manville Corp. 25
*Jov Manufacturing Co. 6

Kaiser Aluminum & Chemical Corp. 109
Kansas City Hay Press Co. 279
*Kennedy Van Saun Mfg. Co. & Engrg. Corp. 134-135
Kent Machine Co. 266
Kirk & Blum Mfg. Co. 226
Koehring Co. 114-115
Koppers Co., Inc. 179
*Kraft Bag Corp. ....Back Cover

Laclede-Christy Company, Div. of H. K. Porter Company, Inc. 38
Laughlin Division, Thomas American Hoist & Derrick Co. 24
Lincoln Electric Co. 170
*Link-Belt Company 35, 157
*Link-Belt Speeder Corp. 53
Littleford Bros. 259
Lone Star Cement Corp. 214
Lubrecht III, William 289
Lubriplate Division, Fiske Bros. Refining Co. 154

Mace Company 262
Mack Motor Truck Corp. 173
Manhattan Rubber Div. Raybestos-Manhattan, Inc. 103
Manheim Mfg. & Belting Co. 125
Manitowoc Engineering Corp. 124
Marion Power Shovel Co. 77
Marsh Engineering Co., E. F. 264
*McLanahan & Stone Corp. 88
McNamar Boiler & Tank Co. 144
*Meckum Engineering, Inc. 176
Medusa Portland Cement Co. 227
Memphis Equipment Co. 150
*Merrick Scale Mfg. Co. 180
Minneapolis-Moline Co. 7
Mobile Drilling, Inc. 156
*Morris Machine Works 160
Motorola Communications and Electronics, Inc. 39
Multipack, Inc. 241
Murphy Diesel Co. 70

National Carbide Co. 287
National Ready Mixed Concrete Assn. 210
National Sand & Gravel Assn. 210
National Wire Cloth Co. 262
*Naylor Pipe Co. 36
Noble Company 247
*Nordberg Manufacturing Co. 48-49
*Northern Blower Company 158
Northwest Engineering Co. 5

OK Manufacturing Co., Inc. 252
Okonite Company 132
Olsen Corp., Gene 275
O'Neill, A. J. 285
Oronite Chemical Co. 215
Orton Crane & Shovel Co. 29
Oswalt Engineering Service Corp. 259

*Page Engineering Co. 199
Penn-Dixie Cement Co. 270
*Pennsylvania Crusher Div. Bath Iron Works Corp. 4
Pennsylvania Drilling Co. 282
*Pettibone Mulliken Corp. 111
Pioneer Engineering Works, Inc. 165
Porter Company, Inc., H. K. 38, 73
PreCaster, Inc. 224

Quaker Pioneer Rubber Mills Quaker Rubber Corp. Divs. of H. K. Porter Company, Inc. 73
Quinn Wire & Iron Works 252

Radio Corporation of America 231
Raybestos-Manhattan, Inc. Manhattan Rubber Div. 183
*Raymond Bag Co. 59
*Raymond Div. of Combustion Engineering, Inc. 16
Reichard-Coulston, Inc. 216
Reo Motors, Inc. 142
Roebling's Sons Corp., J. A. 93
Rogers & Co., Inc., Ralph 284

St. Lawrence Cement Co. 216
Sauerman Brothers, Inc. 46
Schaffer Poidometer Co. 174
Scheu Products Co. 250
*Screen Equipment Co. 163
Service Supply Co. 281
Servicised Products Co. 232
Shawnee Step Form Co. 262
Sheffield Steel Corp. 200
Side-O-Matic Unloader Corp. 260
Simplicity Engineering Co. 201
Sinclair Refining Co. 117
SKF Industries, Inc. 169
*Sly Mfg. Co., W. W. 164
*Smidth & Co., F. L. 167
Smith Engineering Works 30-31
Smith, Inc., L. B. 289
Solvay Process Div. Allied Chemical & Dye Corp. 272
Southern Tire Co. 212
Soang & Company 178
Spencer Chemical Co. 149
Spillman Co., R. L. 269
Sprague & Henwood, Inc. 150
Spray-O-Bond Co. 260
Spray Starting Fluid Co. 289
Standard Metal Mfg. Co. 277
Stanhope, Inc., R. C. 285
*Stearns Manufacturing Co. Inc. 229, 276
*Stephens-Adamson Mfg. Co. 277
Stolley Construction Co. 288
Stoody Co. 18-19
Straub Mfg. Co. 69
*Sturtevant Mill Co. 76
Suretv Rubber Co. 250
Swabb Equipment Co., Inc., Frank 284
*Syntron Co. 204

Taylor-Wharton Iron & Steel Co. 116
Thermo Stone Brick Co. 270
Thew Shovel Co. 187
*Thomas Foundries, Inc. 45
Timken-Detroit Axle Div. 122-123
Tool Steel Gear & Pinion Co. 33
Towmotor Corporation 261
*Traylor Engrg. & Mfg. Co. 138, 196
Trinity Div. General Portland Cement Co. 267
*Twin City Iron & Wire Co. 252
Twin Disc Clutch Co. 206
*Tyler Co., W. S. 174

United States Rubber Co. 65, 118
*United States Steel Co. 37
*Universal Engineering Corp. 111
*Universal Vibrating Screen Co. 180
Unverzagt & Sons, G. A. 284

Victor Equipment Co. 208

Webb Corporation 279
Werd & Schaeffer Tire Co., Inc. 285-286
*Western Precipitation Corp. 292
Wheeler Co., Inc. 270
White Motor Co., Autocar Division 189
*Wickwire Spencer Steel Div. Colorado Fuel & Iron Corp. 290
Wiley & Sons, Inc., John 260
Williams, Roger F. 260
*Wood Co., Chas. E. 278
Worthington Corporation 249
*Yuba Manufacturing Co. 168

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